DVORAK CHANNELS • DESKTOP VIDEO

FREE

California's Computer Magazine

JUNE 1988 • 44

MICROTIMES™

THE NEW AT&T INTERFACE

Open Look Challenges Mac, Presentation Manager

CONNECTIVITY

• Lap Link Mac •

• PC Transporter •

NEW COLUMN

• Realizable Fantasies •

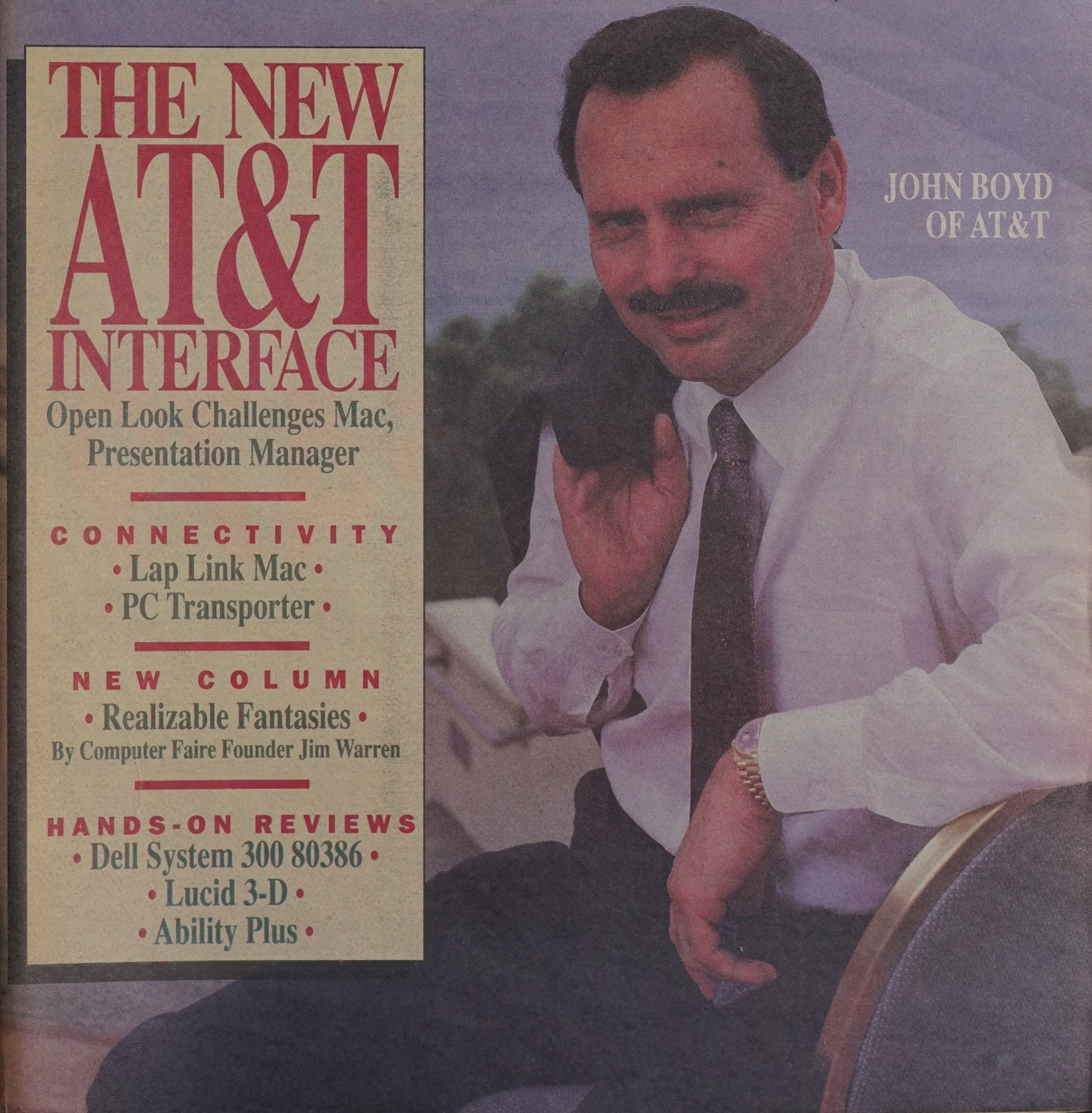
By Computer Faire Founder Jim Warren

HANDS-ON REVIEWS

• Dell System 300 80386 •

• Lucid 3-D •

• Ability Plus •



JOHN BOYD OF AT&T

Your Best Buys Are Always At

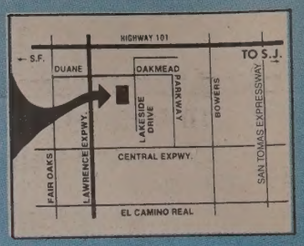
HOME OF FAST, CONVENIENT, COURTEOUS SERVICE

ELECTRONICS

fry's

541 LAKESIDE DRIVE
SUNNYVALE

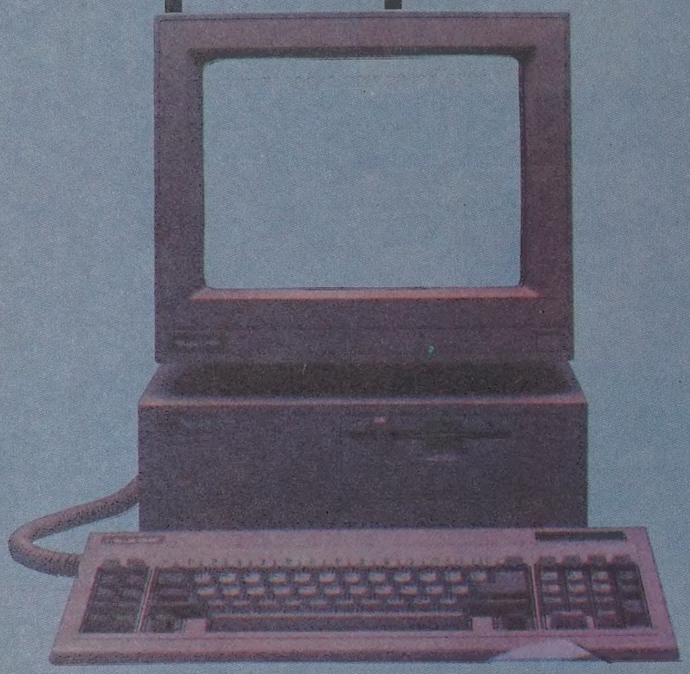
PHONE:
408/733-1770



Hours
Mon-Fri 8 am-8 pm, Sat 9-6
OPEN EVERY SUNDAY 9-6

BLUE CHIP

pcPopular MONO SYSTEM



- 4.77/10 MHz 8088-2
- 256K RAM Expandable to 640K On The Motherboard
- 5¼" 360K Floppy Disk Drive
- Serial/Parallel/Game Ports
- Hi-Res Monographics Card
- Mono Monitor

$479

6/10 MHz 286 AT MONO SYSTEM

- 512K RAM Expandable to 2 MB on Motherboard
- 5¼" 1.2 MB Floppy Disk Drive
- Serial/Parallel Ports
- Clock/Calendar
- Hi-Res Monographics Card
- Mono Monitor

$949

Best Prices - Excellent Service - Quality Products
Will Meet Or Beat Any Advertised Price!

10 MHz 0 Wait State AT System

* 512K on 1Meg Mother Board
* 6/10 MHz switchable CPU
* 0 or 1 Wait State selectable
* Built-in Clock calendar w/Battery back-up
* 220 Watt Power Supply
* Monographic Printer Card
*360K/720K/1.2MB Floppy Controller
* 360K Fujitsu Floppy Drive
* High Resolution Monochrome Monitor
* AT/XT Keyboard
* 48 hrs. Burn-In

$839

16 MHz AT System
Fastest 286 System ever built

* 512K on 1Meg Mother Board
* 6/12 MHz switchable CPU running equivalent to 16 MHz at 0 Wait State
* PHOENIX BIOS
* Built-in Clock Calendar w/Battery Back-up
* 220 Watt Power Supply
* Monographic Printer Card
* 360K/720K/1.2MB Floppy Controller
* 360K Fujitsu Floppy Drive
* High Resolution Monochrome Monitor
* AT/XT Keyboard
* 48 hrs. Burn-In

$899

Video Cards

* Herc.Comp. CGA/EGA/MGA Autoswitch $119
* Herc. Comp. CGA/EGA/MGA with PrinterPort Everex $159
* Color/Monographic 2 in 1 Card $79
* Monographic Card w/Printer Port $41
* Color Graphic Card w/Printer Port $41

Modems

* 1200 Baud Internal w/software $65
* 1200 Baud External w/software $89
* 2400 Baud Internal w/software $135
* 2400 Baud External w/software $175

DOS

* MS-DOS 3.21 w/GW-Basic $69
* MS-DOS 3.3 w/GW-Basic $99

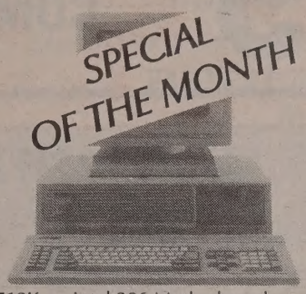
Keyboards

* XT 84 Keys AT Style $39
* XT/AT 84 Keys $45
* XT/AT Enhanced (102 Keys) $59

More Savings For You!

Intel 386 System
Best Buy on 386's

SPECIAL OF THE MONTH



* 512K on Intel 386 Motherboard
* 1 SR, 1 PR Port, Clock/Calendar
* PHOENIX BIOS
* 220 Watt PS, Deluxe AT Case
* Herc. Comp. Monographic Printer Card
* High Density Floppy Controller
* 1.2 MB Floppy Drive
* High Res. Monochrome Monitor
* AT/XT Keyboard
* **SPECIAL PURCHASE. LIMITED TIME ONLY!** **$1799**

DTK 386-16 System **$1799**
Same Config as Above
With 2 SR Ports and 1 MB RAM On Board

Seagate Hard Disk

* 20 MB w/XT Controller & Cable.. $269
* 30 MB w/XT Controller & Cable.. $289
* 40 MB ST 251 ..... $399
* 20 MB ST 4026 fast speed $279

Floppy Drives

* Fujitsu/Teac 360K $72/82
* Fujitsu/Teac 1.2MB $92/102
* Fujitsu 3.5" 720K $110

Monitors

* Samsung Amber w/Tilt & Swivel $69
* Samsung Color RGB $249
* Samsung EGA $359

Ser./Par./Clock/GameCards

* Serial/Parallel/Game Card for AT/XT $49
* RS232 Serial for XT $25
* RS232 + Clock for XT $39
* Clock/Calendar for XT $29
* Game and Clock for XT $36
* No Slot Clock $29
* Multi I/O for XT (provides SR/PR/Game Port, Fl. Contr., Clock/Cal. for XT) $53
* Game Card, 2 Ports for AT/XT $19
* Parallel Printer Card $15

Power Supply

* 150 Watt for XT $47
* 180 Watt for Baby AT $55
* 220 Watt for AT $69

12 MHz Baby AT

* 512K on 1Meg Mother Board
* 6/12 MHz clock speed
* Built-in Clock Calendar w/Battery back-up
* AWARD BIOS
* 200 Watt Power Supply
* Monographic Printer Card
* Space saving small Baby AT Case
* 360K/720K/1.2MB Floppy Controller
* 360K Fujitsu Floppy Drive
* High Resolution Monochrome Monitor
* AT/XT Keyboard
* 48 hrs. Burn-In

$869

10 MHz Turbo XT System

* 256K on 640K MB,4.7/10 MHz switchable
* 150 Watt Power Supply
* Monographic Printer Card
* 360K Fujitsu Floppy Drive w/Controller
* High Resolution Monochrome Monitor
* AT Style Keyboard
* 48 hrs. Burn-In

$459

Mother Boards

* 386 8/16 MHz (running at 21 MHz).... $1189
* AT 6/12 0 Wait running at 16 MHz $359
* AT 6/10 0 Wait $299
* AT Baby 6/12 ..... $299
* XT 4/10 MHz $89
* XT 10 MHz w/Disk I/O $129

All Motherboards with 0K

Floppy/Hard Disk Controller

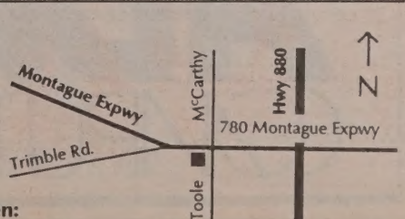
* 2 Dr. Floppy Controller $25
* 2 Dr. AT/XT 360K/720K/1.2MB Fl.Contr. $39
* Hard Disk Contr. for XT $59
* Hard & Floppy Contr. for AT/RLL .. $119/179

Memory Expansion Boards

* **EEMS for XT/AT**, provides up to 2 MB of expanded/extended memory. SW incl. $109
* **EEMS for AT**, provides up to 2 MB of 16-bit expanded or extended memory. Supports DESQview, Framework, Symphony, Lotus 1-2-3, etc. $119
Logitech Mouse $52

Chassis

* XT Slide-In Case $29
* AT Jr. Case $39
* Super Deluxe Baby AT Case w/200 W Power Supply $110
* AT Case $69



408-432-6277 AMERICAN COMPUTER SYSTEMS

One Year Limited Warranty on all XT/AT Systems, Parts, 90 days Labor.

All Prices reflect 3 1/2 % cash discount. Prices subject to change without notice. Not responsible for typographical errors.

780 Montague Expressway #305
Koll Commerce Center, Bldg. 3
San Jose, CA 95131
Right Next to RYDER TRUCK RENTAL

open:
9:00-5:00 Mon-Fri
12:30-4:30 Sat

Systems Prices May Change Due To Increase In Memory Prices.

XT COMPATIBLE

- 1 Floppy
- 256K RAM Expandable to 640K
- Monographic Card
- Hi-Res Mono Monitor

only **$499**

AT COMPATIBLE MONO SYSTEM COMPLETE $999

H.I.M.S. WORKSTATION
MYLEX 386 + 60 MB HARD DISK

Mono System $2999
1MB Memory $1250
4 MB Option
19" Monitor + 80387 + Tape Backup
ALL CONFIGURATIONS CALL

MACINTOSH II
80 MB Hard Drive
19" Monitor
Extra Memory
Laser Printer
Lease From **$159** Mo.

SAMSUNG AT
60MB HARD DRIVE
1 MB MEMORY
2 SERIAL + 1 PARALLEL

Monographics System $1699
EGA System Add $399
Laser Printer H.P. $1635

COMPUTERS
Macintosh + ... LOW
Macintosh SE 1935
Macintosh SE (20MB) 2485

IBM All Models
AT (30MB) $3300
PS/2 Mod 25 919
PS/2 Mod 30 1187
PS/2 Mod 60 3375
PS/2 Mod 80 ..... CALL

AST
Lowest Prices
AST 386 Computer .... LOW
AST 286 40 MB Hard . 2300

386 COMPUTERS
HIMS (Mylex) $2295
HIMS Work Station ... CALL

LAPTOPS
Toshiba 1000 ..... $795
Toshiba 5100 4994
NEC Multispeed EL 1495
NEC + Hard Drive 2295
Zenith 20 MB ..... CALL

COMPAQ
386-20 MHz ..... LOW
Portable ..... LOW

SAMSUNG
286 + 1 MB Memory .. $1099
SAMSUNG 600/300 ... CALL

PRINTERS
IBM Proprinter II $359
IBM Pro (x24) 580
IBM Pro Printer XL 529
IBM ProPrinter XL24 799
IBM Quiet (3) 1149
Apple Image II 454
Star NX 1000 175
Star NX 1000C 250
Star NB 2410 429
Star NB 2415 565
Star ND 10 289
Star ND 15 399
Star NX 15 299
Okidata 182 Plus 224
Okidata 182 210
Okidata193 425
Oki 192 Plus 365
Oki 292 w/intrf 434
Oki 293 wintf 549
Epson LX 800 220
Epson FX86E 350
Epson FX286E 489
Epson LQ 1050 750
Epson LQ500 349
Epson LQ850 525
Epson LQ2500 869
Epson EX 1000 479
Tractor LQ 1000 39
Toshiba 351 SX 969
Panasonic 1592 369
Panasonic 1595 429
Panasonic 3131 259
Panasonic 3151 409
Siekosha SP 1200 169
HP Laser Jet 2 1625
Diconix 150 Inc Jet 289
Dinconix 300 wide 479
Brother HR20 334
Brother 1509 359
NEC P6 429
NEC P2200 339
NEC P7 579
NEC 890 3300
Citizen 120D 157
Citizen 180D 169
Citizen MSP10 229
Citizen MSP 15 289
Citizen MSP40 269
Citizen Premier 35 399
Toshiba 321SL 499
Toshiba 341 SL 625
Toshiba 351 II PS ..... CALL

SOFTWARE
Lotus 123 Ver 2.01 299
dBase 3+1.1 375
Xerox Ventura Desk Top Publishing (1.1) 495
Framework 2 339
Symphony 1.2 419
Microsoft Word 4.0 209
Microsoft Windows (2.03) 65
Microsoft Works 119
Microsoft Excel 294
Wordperfect 4.2 194
Q and A (2.0) 204
Prof Write 109
Norton Utilities(4.0) 49
Norton Advanced 79
Wordstar Pro 4 229
Micraft Mouse 115
Logitech Mouse 79
Multi-Mate Adv. (2) 299
Work Peer. Libr. 59
Manage Your Money 119
UNIX ..... CALL
XENIX ..... CALL

MODEMS
1200B Internal $69
Hayes 1200 ..... CALL
Everex 1200B 89
2400 BPS 189

GRAPHIC CARDS
AST 6 PK 64K $125
Ast. Prem 256K 189
Ast. Ramp (#266) 375
NEC EGA (GB1) 199
Video 7 Delux 199
Video 7 VGA 289
Quad Prosync w/mouse . 219
Quad Ultra VGA w/mouse 319
Genoa Hi Res. Plus 220
Paradise EGA 350 134
Paradise EGA (480) 179
Everex Auto (480) 139
Hercules color 139
Hercules mono Plus 169
Everex The Edge 199
ATI (VIP) VGA 289
ATI EGA Wonder 189
ATI Small Wonder 119

DRIVES
Floppy $75
20 MB 225
40 MB 450
60 MB ..... CALL
80 MB 895
120 MB ..... LOW
380 MB Maxtor ..... CALL
Tape BackUp 398

NETWORKING
Novell Network + X Stations + Printers
Network Your Present Systems/Computers/Printers At Your Site

FAX MACHINES
Sharp ..... CALL
Brother ..... CALL

MONITORS
Monochrome $89
NEC Multisync 574
Mitsubishi Multiscan 499
Sony 1303 585
Samsung EGA 379
NEC XL 1975

CHIPS
256K ..... CALL
80386-16 ..... CALL
80386-20 ..... CALL
1 MB Chips ..... CALL

SCANNERS/PLOTTERS/ DIGITIZERS
H.I. Plotter ..... CALL
Summa Graphic ..... CALL
Roland ..... CALL
H.P. Plotter ..... CALL

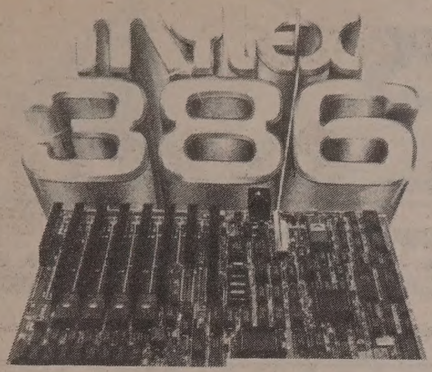
ADVANCE COMPUTER SYSTEMS

3 LOCATIONS TO SERVE YOU

FAX (408) 749-9449

SUNNYVALE 665 GRAPE AVE. **(408) 732-6200**
WALNUT CREEK 1987 N. MAIN ST. **(415) 945-8011**
SAN FRANCISCO 1231 MARKET ST. **(415) 552-2902**
(Inside San Francisco Hotel Mezzanine, Market & 8th)

(A) Prices subject to change
(B) Cash Prices
(C) Financing Available
(D) Not responsible for typo error
(E) Subject to stock on hand
(F) Diskettes in Min. Qty. 50
(G) Prices vary at stores



The 386 Center

The MYLEX 386 System Board!!

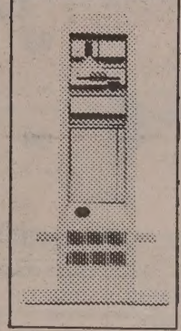
The 386 Board Features:

- Intel 80386 6/16 MHz Keyboard selectable
- 1MB or 4MB of 32 bit RAM on the system board
- 64KB or 32-bit no wait-state CACHE memory
- BIOS by AMI
- 6-16 bit slots & 2-8 bit slots
- Battery backup for Clock/Calendar and Hardware Setup
- Socketed for 80287 6/10 MHz coprocessor
- Norton Rating 23.5
- 1 Year Warranty
- Made in USA

FASTEST 386 IN THE WORLD At This Price CALL

386 CENTER

Mylex Board	LOW
Micronics Board	LOW
Intel Board	LOW
Memory Chips	
Static Column	CALL
4 MB Board For Compaq 386 + Memory	CALL



FOR PROFESSIONALS

H.I.M.S. WORKSTATION

386 Computer, 240 MB hard drive, 60 MB tape. Targa board, Forte boards, digitizers, plotters, slides, workstations, laser printers, 700 cps printers, networking, CAD. We set up & install custom configurations

"The HIMS 386 leaves IBM PS/2 Mod. 80, the Compaq 386 & PC Limited 386/16 in the dust" **$Call**

Gold Authorized Dealer

NOVELL

Server/Work Station:
6/8 MHz 286, 12 slots, 238W P/S, S&P Ports, Monitor, 360K Flpy, 1 MbRAM, 44 Mb H.D.
NOVELL Non-Dedicated Netware 286
ARCNET 4-Port Passive Hub
3 ARCNET Cards and Cables up to 100 Feet Each.
2 SUPERturbo XT 640K, 10MHz, 8088-1, 360K Floppy and "AT-Style" Keyboard, "FCC" Approved.
3-Amber Monitors Included.

****A COMPLETE NETWORK****

RETAIL....$9,258 **NOW ONLY....$5,388**

*Leasing available to qualified businesses.

CONNECTIVITY

CONSULTATION AND INTEGRATION QUESTIONS?? CALL OUR EXPERT SALES & TECH STAFFS!! NOVELL ADVANCED NETWARE STARTER KITS AND SERVERS....CALL

WESTERN DIGITAL

StarLan/Novell Starter
1 Star and 2 StarLink Cards
3 25 Foot Cables and NetBios
Novell Advanced Netware 286 v.2.0A
$1,795

ArcNet Starter Kits with Novell Software

NOVELL

Advanced NetWare 286 v.2.0A
3 CompuPro PC Arcnet Cards and Cables
1 CompuPro 4-Port Passive Hub

Complete Kit	$1,978
Above Kit with **4PC**-Arcnet Cards	$2,149
Above Kit with **5PC**-Arcnet Cards and an 8-Port Active Hub	$2,695
Intercontinental Micro Systems-MS-CPS-PC PC/XT **AT Slave CPU Card** and Graphics Terminal with Software to Install in Novell Environment	$1,095
ARCNET Compatible 1/2 Card	$235
ARCNET 8-Port Active Hub	$449
ARCNET 4-Port Active Hub PC/Card	$225
ARCNET 4-Port Passive Hub	$39

PLOTTERS

Calcomp 1041 GT	4,498
1042GT	7,650
1043GT	6,576
1044GT	10,750
Enter FB1000, AD	3,023
GTCO MD-7, 4 button	767
Hewlett-Packard	
7440, 8 pen, A size	986
7475A 6 pen, AB	1,442
7550A, 8 pen, AB	2,970
7570, 8 pen	3,896
7595A, 8 pen, A-E	8,044
7596A, 8 pen, A-E rl.	9,590
Houston Instruments	
PC 695, 4 pen, AB	578
DMP 29, 8 pen, AB	1,653
DMP 41, 1 pen, CD	2,157
DMP 42, 1 pen, CD	2,157
DMP 51, 1 pen, CD	2,877
DMP51MP, 14 p., CD	3,381
DMP52, 1 pen, CD	2,877
DMP 52MP, 14 p. CD	3,381
DMP 56A, 1 pen, A-E	3,957
DMP 56C, 1 pen, A-E	4,101
DMP 61, 1 pen, AD	3,381
DMP 62, 1 pen, AE	4,677
MP 6, 6 pen	647
MP 60, 6 pen	603
DMP 6x buffer	829
Scancad	2,434
Ioline LP3700	3,211
LP3708	3,593
Mitsubishi CHC-65	7,304
Roland DXY 880	1,004
DXY 980	1,238
Versatec	CALL

DIGITIZERS

Calcomp	
12" x 12"	349
24" x 36"	3,970
Hitachi	
1111, Tiger w/12 bu.	699
1515 w/12 button	1,395
2222 w/12 button	2,812
2436 w/12 button	3,582
3648 w/12 button	4,401
3648BL w/12 button	6,914
Houston Instruments	
PC PAD	315
DT11AA, 11 x 11, 1 bu.	628
DT114, 11 x 11, 4 bu.	688
TG 1011, 11 x 11, 16 bu.	853
TB 1017, 11 x 17, 16 bu.	884
TG 8011, 11 x 11, 16 bu.	895
TG 8017, 11 x 17, 16 b.	1,526
TG 8024, 18 x 24, 16 b.	2,498
TG 8036, 24 x 36, 16 b.	3,245
Summagraphics	
12" x 12"	365
24" x 36"	3,180

High-Resolution Monitors

Amtron	CALL
Conrac 7351	2,709
Control Systems 19/64	2,680
Hitachi CM2073	2,695
Intecolor Megatrend	1,430
Microvitec	CALL
Mitsubishi	
C3922K, LPK	1,881
HG6905BK	2,755
C6922AGK	2,173
C6922LPK, PK	2,211
C8652AK	1,760
C89A8NB	2,720
C9919BK	2,562
C9920BK	2,387
FG6600AK	2,126
NEC Multisync	565
Sony Multiscan	620

ADVANCE COMPUTER SYSTEMS

WALNUT CREEK 1987 N. Main St.
(415) 945-8011

SUNNYVALE 665 Grape Ave.
(408) 732-6200

SAN FRANCISCO 1231 Market St.
(415) 552-2902

Inside San Franciscan Hotel main floor Market & 8th Mezz
Not responsible for typographic errors
Subject to stock on hand. Prices subject to change

3 LOCATIONS TO SERVE YOU

JUNE 1988 ISSUE #44

MICROTIMES™

COVER AND CONTENTS PHOTOS: BRAD GRAVERSON

John Boyd, sales and marketing vice president of AT&T's Data Systems division, talks about the new Open Look standard.

COVER STORY

52 AT&T Opens The Windows
By Mary Eisenhart
In which AT&T announces the Open Look windowing interface for UNIX, thereby setting up yet another industry standard to compete with Macintosh and OS/2.

NEW THIS MONTH

35 Jim Warren's "Realizable Fantasies"
Computer Faire founder and enthusiastic fomenter of the personal computer revolution, Jim Warren takes an imaginative, eclectic view of the computer and its possibilities.

FEATURES

48 Personal Computing: The Industry That Takes Itself Too Seriously
In which Mike Markowitz debunks a few myths and takes issue with Dvorak.

58 The Power Of Desktop Video
By Ben and Jean Means
If your business presentations are a little lackluster, consider the option of newly affordable desktop video.

66 Tom Campbell: Facing High-Tech Trade Issues In ACompetitive World *By Robert Grant Beauchamp*
In this second part of the two-part "New Politics In Silicon Valley," Republican congressional challenger and Stanford law professor Tom Campbell states his views.

74 Programmer's Perspective: Entering The Parallel Universe *By Jack J. Woehr*
Once prohibitively expensive, Multiple-CPU parallel processing is coming to a desktop near you sooner than you might think.

94 The PC Weather Pro *By Robert Grant Beauchamp*
This low-cost package lets you turn your PC into a weather station for professionals and amateurs alike.

102 101 Adventures In The Add-On Market
By Mary Eisenhart
How E. Michael Lunsford's 101 Lotus macros were the beginning of a diversified add-on publishing business.

HANDS ON

78 Dell System 300 80836 *By David Garfinkel*
Mail order may offer many traps for the unwary, but this well-supported, high-quality machine is a good buy and a safe bet.

80 Ability Plus *By Ed Kahn*
Migent's integrated business package offers functionality and ease of use to the home-office or small-business user.

93 Lucid 3-D *By Steve Guttman*
This powerful three-dimensional spreadsheet is also memory-resident, so it works with your other applications.

96 The PC Transporter *By Mike Markowitz*
This board from Applied Engineering fits in one of the IIGS's slots and lets the user run MS-DOS applications.

104 ZCOMM And ZMODEM *By Lenny Bailes*
If you do a lot of file transfer over less-than wonderful phone lines these shareware packages are an excellent choice.

DEPARTMENTS

10 Calendar Of Events

18 News And Analysis *By Paul Hoffman*

38 Reviews

46 Kenfil Software Chart

108 Buyers Guide

134 User Group Network

160 Classifieds

164 Index Of Advertisers

166 Dvorak's Last Column *By John C. Dvorak*
Channeling Jorge, an entity who seems to have caused quite a bit of trouble.

COLUMNS

112 UNIX *By Bennett Falk*
Benchmarks for Sun's new 386-based workstation.

116 Telecommunications *By Brock N. Meeks*
Is the FBI watching your neighborhood BBS? Can you do anything about it?

120 HyperCard *By Birrell Walsh*
Activision's *Reports* beats the card-format limitation.

122 Macintosh-PC Connectivity
By Robert Grant Beauchamp
Lap Link Mac, from laptop wizards Traveling Software, lets you transfer files from your laptop or desktop PC to the Mac.

126 Apple II *By Mike Markowitz*
New products from Brøderbund, new *AppleWorks* from Claris, and the pros and cons of II-based nets.

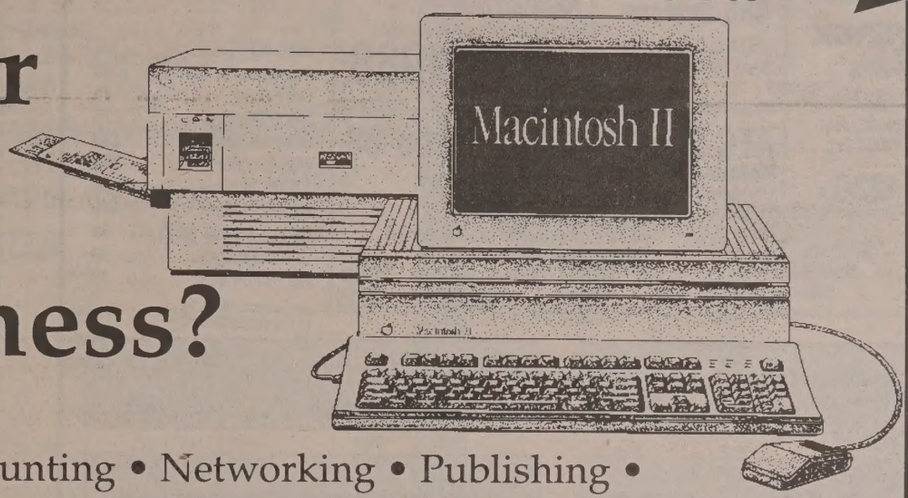
128 CP/M *By Robert D. Athey Jr.*
DOSDISK lets you read DOS files on your CP/M machine.

130 Amiga *By Matthew Leeds*
More on KS/WB 1.3, the Amiga's new operating system.

132 Atari ST *By David Hawkins*
Two very different ST word processors.

What can Macintosh do for Your Business?

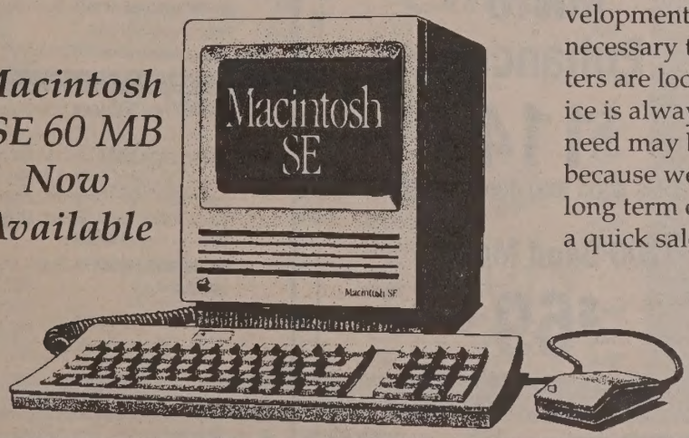
• Communications •
• Presentations •
• Financial Analysis •
• Document Processing •
• Mac to MS Dos •



• CAD • Accounting • Networking • Publishing •

The Best Way to find out is to visit your nearest Computer Attic. Whether you work in a large corporation or out of your own home, Macintosh has something to offer you. Even if you have already made an investment in MS DOS, the technology and products exist today to bridge that gap and allow you to retain that investment while still benefiting from the Macintosh Advantage. Computer Attic's organization is staffed with people who can address your specific needs - Accounting, Publishing, Video Presentations, Networking, Mac-DOS Communications, and General Office Productivity. With hundreds of large-scale and single system installations under our belt, we are prepared to successfully address your needs - be they small or large.

Macintosh SE 60 MB Now Available



Computer Attic has invested heavily in the development of it's people and in the resources necessary to support our customers. ServiCenters are located in each store and On-Site Service is always available. No matter what your need may be, Computer Attic is the place to go because we are more interested in creating a long term customer relationship than in making a quick sale.

Authorized Dealer

COMPUTER ATTIC

Palo Alto
382 University Ave
(415) 322-0639
Corp. Sales: 322-4800

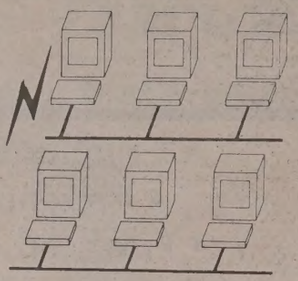
Cupertino
10251 S. DeAnza Blvd
(408) 253-5300
Corp. Sales: 253-5300

San Francisco
217 Sansome St.
(415) 398-4541
Corp. Sales: 398-4543

Local Area Networks

NOVELL
Advanced Netware

NET
LOCAL AREA NETWORK SYSTEM



- We provide hardware & software installation & a full range of LAN services
- Lease to own option
- Maintenance/service contracts available

New Mac Peripherals

EVEREX

ACT NOW
Only Good Thru May 30!

Mac 20MB HD Ext.	Mac Modem 2400B Ext.
$495	$239

Mac 40/90 HD Ext $869/1325
Mac II 20/40 MB HD Int . . 425/795
Mac II 90 HD Int 1295

Quality & Performance plus Service & Support

386 System
16 MHz 0 wait state
1MB RAM
1.2MB floppy drive
Mono-graphic card & monitor
Made in USA **$1988**

ATC Pro-286
Made in USA
8/10 MHz-1/0 wait state
512K RAM
Mono-graphic card & monitor
1.2MB floppy drive **$888**
w/40 MB H.D. . . . $1268

ATC Turbo-88
4.77/8 MHz
256K RAM
Mono-graphic card & monitor
360K floppy drive **$425**
w/20MB H.D. $715

SPECIALS

Multi I/O	$55
Monographic Card	45
Color Card	45
Mono Monitor	75
Color Monitor	250
EGA Monitor	360
1200B Modem	69
2400B Modem	149
Genius Mouse	69
Computer Paper	29
AB Switch Box	39

NEC Multispeed Laptop $1279
P7 Printer. $599

HEWLETT PACKARD
Laser Jet Series II $1649

star NX 1000
8 built in fonts & paper parking features
$179

1-2-4 Memory Expansion Board for HP Laser Jet Series II. $139

Service Contracts Available

EVEREX
286 & 386 Systems

Authorized Everex Dealer

EVEREX
EGA Micro Enhancer
$114 List $395
(Specials good thru June 15, 1988)

1200 Baud Modem
$69 List $199

	Sale	List
EVGA	$259	$395
Evercom 2400 Baud (Int)	175	289
Evercom 2400 Baud (ext)	199	499
Everdrive Internal 40/80 MB	399/859	865/1299
20/30 MB Hard Disk Kit	265/310	480/525

Hurry while supplies last—limited quantity!!

ATC
(415) 776-1520

1504 Franklin Street,
Suite 306
San Francisco,
CA 94109

DEALER INQUIRIES WELCOME
Sales, Upgrades, Repair Services

Not responsible for misprints
Prices subject to change without notice.
Sale prices effective through April 15, 1988
You must bring in this ad to get these prices!

MicroTimes

Consumer Audit BPA

PUBLISHER/EDITOR
Dennis Erokan

CREATIVE
CREATIVE DIRECTOR Lee Ann Nelson
MANAGING EDITOR Mary Eisenhart
EDITORIAL ASSISTANT Robert Beauchamp
PRODUCTION MANAGER Doug Boone
ASSISTANT PRODUCTION MANAGER Sheryl Manchester
ASSISTANT ART DIRECTOR Michael P. Didier
PRODUCTION ASSISTANT Mary Beth DeSantis
ART STAFF David Cunha, Tim Levin, Lisa Lusk, Missy Mote, Heidi Sommer, Deborah Venezia
CAMERA OPERATOR John Moorehead
NEWS EDITOR Paul Hoffman
CONTRIBUTING EDITORS Robert D. Athey, Jr., Bennett Falk, Helmi Kobler, Matthew Leeds, Michael Markowitz, Ben Means, Jean Means, Brock Meeks, Ken Milburn, Jeff Spurrier, Birrell Walsh, Jim Wolcott, Wayne A. Yacco
CONTRIBUTING WRITERS Sue Albert, Lenny Bailes, David Batterson, Steve Guttman, David Hawkins, Woody Liswood, Nancy Mulvany, Aubrey Pilgrim, Sharon Rufener, Stephan Wickham
CONTRIBUTING PHOTOGRAPHERS Ken James, Michael Jay, Pat Johnson, Jim Marshall, Ann Summa
EDITORIAL CONSULTANTS Don Hamilton, Pat Hamilton
TYPESETTING Image Factory, The Typesetting Shop, Inc.

ADMINISTRATION
ASSOCIATE PUBLISHER Miles Hurwitz
ACCOUNTING MANAGER Linda Schenk
ASSISTANT ACCOUNTING MANAGER Lesley Hunter
ACCOUNTING Brian DeLuca, Patrick Emerson, Rosemary Galten, Carol Hunter, Brian Murray
PUBLISHER'S ASSISTANT Erica Stein-Oakley
ADMINISTRATIVE ASSISTANTS Greg Cline, Stephen Kearney, Jill Stauffer

ADVERTISING
ASSOCIATE PUBLISHER Joe Amadeo
ASSISTANT TO THE ASSOCIATE PUBLISHER Marianne P. Stone
ADVERTISING DIRECTOR Chuck Stanley
NATIONAL ACCOUNT DIRECTOR Bill Reefer
ACCOUNT DIRECTORS Barry Green (Northern California), Reece Franklin (Southern California)
SENIOR ACCOUNT EXECUTIVE Jane Shepherd
ACCOUNT EXECUTIVES Susan R. Bower, Tina Gagliano, Lee Salem
ADVERTISING ASSISTANTS Renèe Delucchi (San Francisco), Sally Engelfried (L.A.)
National Reps.: Carol Oppenheimer, John Lockhart

DISTRIBUTION
DISTRIBUTION MANAGER John Erokan
Art Holland, *Assistant Manager/LA*
DISTRIBUTION STAFF John Clefstad, Rand Crook, Roe Eyth, Danny Fernandez, Bruce A. Fraser, Frank Grygus, Eliot Kleinberg, Kirk Lanier, Trevor Loffs, Ron Lubben, Loren Ozaki, Jac Michanovic, Joseph Rafalo, Resource Dist., SDS, Bill Smith, Alan Spector; Racks by Free Distribution
MICROTIMES FOUNDERS Dennis Erokan, Don Hamilton, Pat Hamilton

This Vol. 5. No. 6, June 1988, Whole No. 44 MicroTimes, California's Computer Magazine, is published by BAM Publications, Inc., 5951 Canning St., Oakland, CA 94609. Phone (415) 652-3810. Los Angeles Office, 1800 N. Highland, Suite 220, Hollywood, CA 90028. Phone (213) 467-7878. San Jose Office, 36 Harold Ave., Suite 8, San Jose, CA 95117. Phone (408) 244-4400. Anaheim Office, 800 S. Brookhurst, Suite 1F, Anaheim, CA 92804. Phone (714) 776-2900. MicroTimes™ is © 1988 by BAM Publications, Inc. Subscriptions rates: 12 issues, U.S.: 3rd Class $24 (Allow 3 to 4 weeks for delivery), 1st Class $50 (Allow 1 to 2 weeks for delivery). MEXICO & CANADA: Surface Mail $40 (Allow 4 weeks for delivery). Air Mail $65 (Allow 1 week for delivery). OVERSEAS: Surface Mail $40 (Allow 6 – 10 weeks for delivery), Air Mail $160 (Allow 1 week for delivery). To receive sample issues, please send $2 ($4 for overseas) to cover postage costs. Back issues are $4 each.

All rights reserved. Reproduction in whole or in part without permission of Publisher is strictly prohibited. Unsolicited material is gratefully accepted, but we can't be responsible for returning it unless it is accompanied by a stamped, self-addressed envelope. The staff and management of MicroTimes do not advocate or encourage the use of any product or service advertised herein for illegal purposes.

Below Cost Printing Calculator w/pur. $9.88 reg. 39.95

One of the *newest*, largest, and lowest priced displays in the USA!

WE BEAT EVERYBODY WE TAKE TRADE-INS

Let's Make A Deal Sale

We're Wheeling & Dealing & We're Crazy!

Thank you to our thousands & thousands of customers for making this give away possible!

SUPPLIES

BELIEVE IT OR NOT
Brand New Interface Loaded Office Typewriter
Only $99.88 ($695 value)
Trade in your working IBM Selectric II or III with correction and dual pitch and receive this offer for only $99.88

Check Great June Prices

Repair Service

Ribbons $36/doz

True Blue 386 is the best!

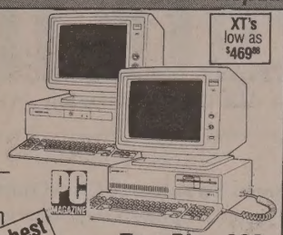
1 MB on 2 MB Board
20 MHz
32 Bit Memory
1.2 Floppy
Monitor
Runs EGA, CGA, & Monochrome on board.
Call for details.

$2259.88

Computers

AMAX 286 AT
Loaded - 20 Meg System
Only $1199.88

True Blue 286 AT
Loaded - 20 Meg, 1 MB System
Only $1499.88



XT's low as $469.88

Highest Quality

True Blue 286
As low as 899.88

PRINTERS/TYPEWRITERS

OLIVETTI - World's Best
CX 880 ..... 368.88
901D (12K mem) 468.88

SILVER REED
EP34 w/int 299.88

ROYAL Typewriters
Beta 8200 ..... 299.88
Beta 9000 ..... 2K mem 378.88

OLYMPIA

Carrera/199.88
Compact S Call/Int.
Compact I 299.88

Startype Office ..... Call
121 XL 80K Spellwrite 288.88
130i ..... Call
125XL (7K mem) 349.88
Orbit/Int Heavy Duty ES95 ..... 399.88

brother
AX/10 ..... 129.88
CE58 ..... 3K mem 268.88
CE50 ..... 199.88
EM100 Heavy Duty 469.88
EM 5 (office machine) 369.88

SHARP
370 17" carr. Office 399.88

EPSON
300 ..... 8K mem 226.88

PANASONIC
210 ..... 6K mem 199.88
TK 35 ..... 4K mem 268.88

100's of miscellaneous electric & electronic typewriters from 59.88
MUST SELL NEW, USED, DEMOS

SCM SMITH-CORONA
Sterling 129.88
Smith Corona X2000 ..... 169.88
5000/5100 ..... 188.88
6200 ..... 268.88
6600 ..... 12K mem 299.88
6700 ..... 16K mem 375.88
5250 ..... 228.88
8500 ..... 16K mem 475.88
Spellwrite Word Erase Electronics

Other models
Pwp 6 ..... 538.88

WORD PROCESSOR w/TW
Smith Corona Pwp 12 ..... 328.88 ... 539.88
Smith Corona Pwp 14 ..... 448.88 ... 649.88
Amstrad 388.88
Magnavox (w/rebate) 549.88

IBM

Selectric I 199.88
Selectric II 349.88
Selectric III 589.88
Others

CANON
350 ..... 8K mem 499.88
500 ..... 7K mem 599.88
300 ..... 399.88
Others

1000's of CRAZY PRICES

HOT PRINTERS! DAISYWHEEL, DOT MATRIX, & LASERS

DAISYWHEEL PRINTER Par 169.88

DYNAX
FORTIS ..... DM 2010 ..... 299.88
BROTHER ..... DM 2015 ..... 385.88
1 YR Guarantee Better than Epson

DX 15XL Serial 299.88
DX 25 7K 388.88
1310 ..... 239.88
DH 45 ..... 678.88

brother
1109 ..... 218.88
1509 ..... 378.88
1709 ..... 539.88
HR40 ..... 628.88
Free T/F

HEWLETT PACKARD
Laser Series II 1699.88
Laser Jet Plus ..... Call
Laser Jet 500 ..... Call

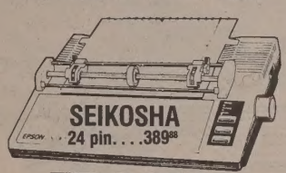
C.ITOH
715A 949.88
815 ..... 1428.88

Panasonic
1080i Apple ..... Call
1592 ..... 479.88
1524 (24 pin) 599.88
Laser Printer 1488.88

STAR GEMINI
SG 10 ..... 228.88
2410 (24 pin) 499.88
1215 (wide carr.) 299.88
Other Models ..... Call

TOSHIBA
1000 ..... 868.88
321 SL ..... Call
341 SL ..... Call
351C 999.88
351 ..... 899.99
321 Par & Ser ..... Call
351 SX 999.88

OKIDATA
Okimate 20 ..... 135.88
192 Plus 299.88
193 Plus 488.88
292 P 489.88
393 P 989.88
Laser Printer 1388.88
Call For Latest Prices

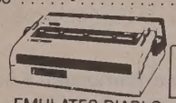


SEIKOSHA
24 pin. ... 389.88

EPSON
LQ 800 ..... 478.88
LQ 1050 ..... 768.88
SL 80 (Com 64) 229.88
SL Imagewriter 249.88
24 Pin (new) 399.88
Others

IBM
Proprinter 388.88
Other models ..... Call

DIABLO
625 ..... 529.88
635 ..... 888.88
HOT



THE BEST
EMULATES DIABLO
SILVER-REED
Exp 600 (25 CPS) 399.88
Exp 800 (40 CPS) 689.88

NEC
P5 XL (24 pin) 1048.88
3550 ..... 799.88
2200 ..... 358.88
P7 (24 pin) 628.88
Other models ..... Call

JUKI
6100 ..... 355.88
6300 ..... 669.88
5510 ..... Color 359.88

Canon
BJ 80 ..... 469.88
LPBP-8 Model II 1688.88
Other Models ..... Call

FUJITSU
Daisymax 320 ..... 999.88
DX 2100F 379.88
DL 3400 Color 789.88
DL 3300 ..... 599.88
DX2300 ..... 478.88
DL2400 ..... 99.88
More Models

CITIZEN
MSP 40 ..... 379.88
MSP 15 ..... 374.88
MSP 55 ..... 549.88
Call For Latest Prices

COPIERS Canon PC Cartridges .. 49.88

The Total Copier System

Sharp Z55 ..... 619.88
Sharp Z70 ..... Call
Sanyo 599.88
Ripro Jr. 588.88
Sharp 7100 ..... 979.88
Ripro 2050 ..... 999.88
Sharp 8100 ..... 2288.88
Sharp 8260 ..... 2788.88
Ricoh 3060 ..... 1888.88

Copier $2995
Document Feeder $899
10 Bin Sorter $799
Total $4693

- 15 CPM
- Enlargement & Reduction
- Color Capabilities
- Stationary Top

Call for special price
Hurry Now While Supplies Last!

CASH REGISTERS *SAVE 50-60%*

Sharp 1017 169.88
Sharp 1050 249.88
Maxi 179.88
Sharp 2050 299.88
Victor 3001 269.88
Victor 3008 499.88

For any size business
ELECTRONICS We have others & accessories
(2-4 dept)

SUPPLIES & ACCESSORIES

NEW LOCATION
YOU MUST BRING AD TO GET THESE PRICES

DEMO INC

102 Grand Ave., So San Francisco, CA 94080
(415) 872-6668

HOURS
M-F 9-5 Sat 10-5 Thurs till 7

All prices and specifications are subject to change without notice. Not responsible for misprints.

CALL FOR DEALER PRICES

CORPORATE DISCOUNTS

THE COMPUTER INTERFACE SPECIALISTS

Specializing in dealer, department store, mail order and premium sale. All offers limited. Call or come in for details. Cash, credit card, check or money order. We ship UPS — add $5.00 for handling.

REPAIR SERVICE

PHONE ORDERS WELCOME

master charge VISA

1000's TO CHOOSE FROM • 1000's IN STOCK!

Super Specials

Keytronic KB's 55.88
Seagate 20 Meg HD w/Controller 254.88
Autoswitch CGA (640x480) 155.88
Super XT I/O & EGA Card 119.88
Microsoft Compatible Mouse 49.88
Bare Bones AT 286 (Case, PS, MB, 512K, Bios) 589.88
Mitsubishi Diamond Scan EGA 920x580 ..... 499.88
Magnavox EGA 399.88
IBM Cables ..... from 5.00
Canon Cartridges 49.88

Ribbons $36/doz

FAX MACHINES
Sharp 150 ..... 1188.88
Sharp 300 ..... 1299.88
Panasonic KX 15 ..... 1369.88

CALENDAR OF EVENTS

May 9 – 12 Spring COMDEX. Georgia World Congress Center,,Atlanta Georgia. Contact the Interface Group at (617) 449-6600.

May 12 Time Line Workshop. Know How, Inc. San Francisco. Contact Sherri Davis, Symantec-Breakthrough Software, (415) 898-1919.

May 12 – 15 Productive Global Networks: Conference On Electronic Communication For Organizations. Philidelphia, PA. Contact Tom Sherman at (215) 328-9773.

May 14 Computer Swap. Alameda County Fairgrounds, Pleasanton. Microshows (800) 433-7469.

May 14 Santa Rosa Computer Show And Sale. Sonoma County Fairgrounds. Golden Gate Shows, (415) 388-8893.

May 14 Computers In Business Seminar. Hayward. Call (415) 452-1129 for information.

May 14 – 15 Amiga-Commodore Show. Santa Clara Convention Center. East West Computer Shows, (415) 388-8893.

May 16 Philippe Kahn Featured Speaker SFPCUG Meeting. Fort Mason Center, San Francisco. Call (415) 751-5219.

May 16 – 18 National Database & 4th/5th Generation Language Symposium. Chicago, IL. Digital Consulting Inc., (617) 470-3880.

May 18 Local Area Networks & Desktop Publishing Free Breakfast Seminars. Sunnyvale. Mip Computers & Communications. Contact Anna at (408) 738-8578.

May 20 OS/2 — What You Need You Know Seminar. Data-Tech (201) 478-5400.

May 20 Mini Expo. 814 Mission Street, San Franciso. Contact AIA Computer Forum. (415) 331-9466.

May 21 Computer Swap. Santa Clara County Fairgrounds, San Jose. Computer Swap America. (415) 366-9162.

May 21 Stress Management For Computer Operators Workshop. Cal State University, Hayward. Call (415) 881-3605 for more information.

May 21 – 22 Oakland Computer Show And Sale. Special Atari Section. Oakland Coliseum. East West Computer Shows, (415) 388-8893.

May 23 – 24 Time Line Workshop. Know How, Inc. San Francisco. Contact Sherri Davis, Symantec-Breakthrough Software, (415) 898-1919.

May 23 – 25 The Expert Systems And Artificial Intelligence Symposium. Washington D.C. Contact Digital Consulting at (617) 470-3880.

May 25 Local Area Networks & Desktop Publishing Free Breakfast Seminars. Sunnyvale. Mip Computers & Communications. Contact Anna at (408) 738-8578.

May 26 How To Build Your Own XT/AT Compatible. Fort Mason Center. Walnut Creek classes also. Registration: (415) 284-1024.

May 27 Time Line Workshop (transition to 3.0). Know How, Inc. San Francisco. Contact Sherri Davis, Symantec-Breakthrough Software, (415) 898-1919.

May 28 Computer Swap. Cow Palace, San Francisco. Microshows (800) 433-7469.

June 1 Local Area Networks & Desktop Publishing Free Breakfast Seminars. Sunnyvale. Mip Computers & Communications. Contact Anna at (408) 738-8578.

June 1 – 3 Independent Computer Consultants Association National Conference. Stouffer's Inn on the Square, Cleveland, Ohio. Call 1-800-GET-ICCA for more information.

June 1 – 3 Technology And Issues Conference For Third Party Macintosh Developers. San Francisco. PCW Communications. Call Sharon Roe at (415) 978-3233.

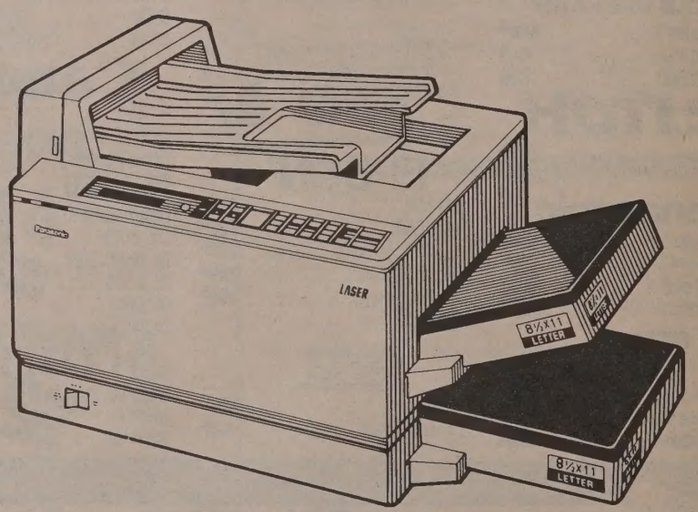
June 4 Computer Swap. San Mateo County Fairgrounds, San Mateo. Microshows (800) 433-7469.

continued

Unmatched Laser Speed. Panasonic Value.

Get both with the Panasonic® Laser Partner.™

Eleven pages per minute. That's how fast the Panasonic Laser Partner prints your text. And that's more performance than you'll get from any other laser printer in its class. Because with Panasonic, you get high speed—and at a price that's an excellent value, too. Plus that great value includes all these features and more:



- Two 250-sheet paper cassettes
- 300 dot-per-inch resolution
- Five popular printer emulations*
- Standard parallel and RS-232 serial interfaces
- Convenient front panel controls
- 512K RAM standard

Finally . . . An Easy To Use & Fast Laser Printer! Seeing is Believing. Come In For A Hands-On Demonstration!

*HP Laser Jet +, Epson FX286, IBM Proprinter, Diablo 630, Panasonic KX-P1092i

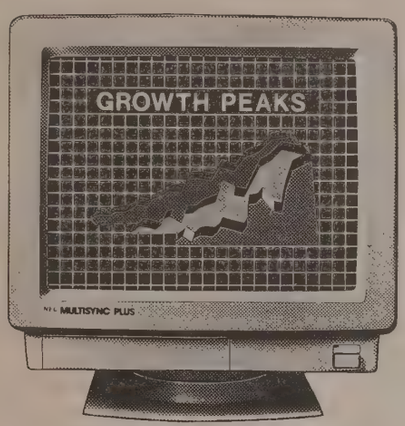
Panasonic Office Automation OA

Computertime

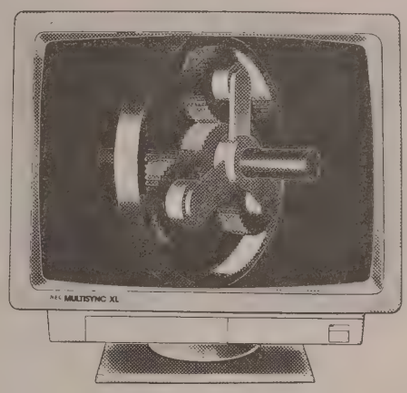
San Rafael
1115 Third Street
459-8080

San Francisco
3 Embarcadero Center
397-6776

Now in Stock from Mini Micro Supply.

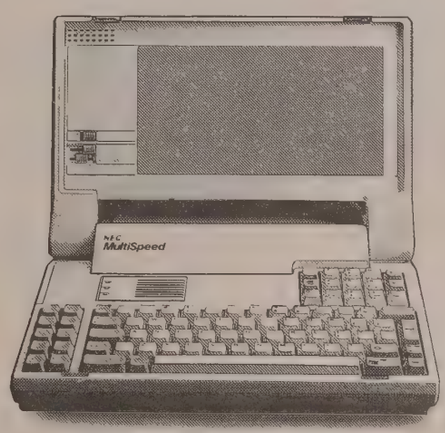


NEC® MULTISYNC® PLUS



NEC® MULTISYNC® XL

NEC® MULTISPEED™ HD



NEC® MULTISPEED™ EL

We're Mini Micro Supply. The one company that fills large volume orders, fast. Because everything you need in PC's is in stock. From board level on up. Including NEC's new MVA 1024. With resolution up to 1024 x 768. Perfect for CAD and desk-top publishing applications.

That's why we're the ones for NEC's MultiSync monitors. Or NEC's MultiSpeed laptop computers.

We have the quantities you need. Competitive prices. And complete technical support.

So look no further. Call today. (408) 434-6859. Or write Mini Micro Supply, 2050 Ringwood Ave., San Jose, CA 95131. For technical details call NEC Home Electronics (USA) Inc. at 1-800-NEC-SOFT. VARs and dealers only.

Mini Micro Supply. The one name worth remembering.

Mini Micro Supply
The Reseller's Resource.

NEC is a registered trademark of NEC Corporation

Best Prices - Excellent Service - Quality Products

AT 286 Bare Bones System

- 6/10 MHz 0 Wait AT System $379
- 6/12 MHz 0 Wait (16 MHz Landmark CPU Test) $439
- 6/12 MHz Baby AT System (Smaller than XT) $429

All AT Systems Come Fully Assembled and Tested with 220 Watt PS and Deluxe AT Case.

Min. Qty. 3, Sample Price slightly higher

XT Turbo System

4.7/10 MHz 4.7/8 MHz

Turbo XT System $139 | Turbo XT System $135

All XT Systems Come Fully Assembled and Tested with Slide-In Case and 150 Watt PS.

Min. Qty. 5, Sample Price slightly higher

Multi I/O Special
Multi Disk I/O for XT

Provides SR, PR, Game Port
2 Dr. Fl. Cont. Clock
Calendar w. Battery $41

Intel 386 System

8/16 Mhz 386 CPU 512K on Intel Motherboard 1 SR, 1 PR Port, Clock on Board $1399

8/16 MHz DTK 386

21 MHz Landmark CPU Test
0 KB on 1 Meg MB, 2 SR, 1 PR Port
Clock Calendar on Board
$1289

All Systems Come Fully Assembled and Tested with Motherboard, 220 Watt PS, Deluxe AT Case.

Intel 386 MB Only (Special Purchase) $1250

DTK 386 MB Only W/O KB $1150

Keyboard Special

AT Style XT KB	$30
AT Style AT/XT KB	$33
AT/XT Enhanced 101 Keys	$39

Video Cards

2 in color/monographics

w/PR Port	$48
M.G.P.	$36
C.G.P.	$36
EGA w/PR Port	$109
EGA Everex Auto Switch	$129

AT I/O Card $35

RS232 w/Clock $35

RS232 $17

No Slot Clock $20

Mother Boards

- 6/10 MHz AT, 0 Wait $239
- 6/10 MHz Baby AT w/ Award BIOS $279
- 6/12 MHZ, Award BIOS, Baby AT $289
- 6/12 MHz AT MB, 16 MHz L.Mark, 0 Wait, Phoenix BIOS $299
- XT 2-in-1 4.7/10 MHz, Built-In Disk I/O $119
- 4.7/8 MHz Turbo XT MB $63
- 4.7/10 MHz Turbo XT MB $67

MS-DOS 3.21 w/GW Basic	$65
MS-DOS 3.3	$76

Power Supply

- 150 W Power Supply $35
- 180 W for Baby AT $45
- 220 W for AT $56
- 250 W for AT $62

Chassis

XT Slide-In Case	$29
AT Jr. w/3 LED Res/Turbo Switch	$39
Baby AT/ 200W PS	$110
Full Size Deluxe AT Case	$49

Modem

- 1200 Hayes Comp. Int. $51
- 2400 Hayes Comp. Ext. $136

All Prices based on Min. Qty. of 10 Pcs., except where noted differently. All 5M Products have 1 yr. limited warranty. Not responsible for typographical errors. Prices subject to change without notice.

Floppy Drives

- Fujitsu 720K 3.5" $86
- Fujitsu 360KB /1.2MB $63/80
- Teac 360KB /1.2MB $79/89

5M AMERICAN TECHNOLOGY, INC.
780 Montague Expressway, Suite 305
San Jose, CA California 95131
(408) 432-1155

Mouse

- Logitec Mouse $45

C.G.I. Technology-The Only Hardware Sales Company With A *WRITTEN* Lowest Price Guaranteed Policy

- Complete line of HOUSTON INSTRUMENTS Plotter & Digitizer
- WYSE terminal, 286, 386, & P.C.s
- Keyboards by KEYTRONIC & U.S. KEYBOARDS
- HITACHI , MICROVITECS & TEKTRONIX Monitors
- Printers by FACIT, TEXAS INSTRUMENTS & TEKTRONIX
- Personal Computers & LAN System by TEXAS INSTRUMENTS 12MHz 80286 up to 24 multi-user, 20 MHz 80386 up to 32 active terminals and 68020 based system for up to 128 users
- Graphic boards Nth GRAPHICS, VERMONT MICROSYSTEMS & QDP
- Surge supressors, line conditioner by ELECTROGUARD

We Certainly Welcome OEM & RESELLERS

C.G.I. TECHNOLOGY

CALL FOR LOWEST GUARENTEED PRICE
(408) 983-1250

Calendar Of Events *continued*

June 4 Sacramento Computer Show And Sale. Cal Expo. East West Computer Shows, (415) 388-8893.

June 8 Local Area Networks & Desktop Publishing Free Breakfast Seminars. Sunnyvale. Mip Computers & Communications. Contact Anna at (408) 738-8578.

June 8 – 9 Marketing Sales Analysis & Forcasting Using Lotus 1-2-3. San Francisco. Contact Data-Tech Institute at (201) 478-5400.

June 9 Time Line Workshop. Know How, Inc. San Francisco. Contact Sherri Davis, Symantec-Breakthrough Software, (415) 898-1919.

June 11 Computer Swap. Santa Clara County Fairgrounds, San Jose. Miroshows (800) 433-7469.

June 11 – 12 HyperExpo and StackMart. San Francisco Civic. For information call (212)226-4141.

June 15 – 17 MacHack '88 The Macintosh Technical Conference. Ann Arbor, Michigan. Expotech Inc., (313) 882-1824.

June 18 Computer Swap. Santa Clara Convention Center, Santa Clara. Miroshows (800) 433-7469.

June 20 Time Line Workshop. Know How, Inc. San Francisco. Contact Sherri Davis, Symantec-Breakthrough Software, (415) 898-1919.

June 20 – 22 The Expert Systems And Artificial Intelligence Symposium. Chicago. Contact Digital Consulting at (617) 470-3880.

June 20 – 21 Budgeting & Forcasting Using Lotus 1-2-3 San Francisco. Contact Data-Tech Institute at (201) 478-5400.

June 21 – 22 SBT Database Accounting Library Seminar. Sacramento. Contact SBT Corporation (415) 331-9900.

June 23 How To Build Your Own XT/AT Compatible. Fort Mason Center. Walnut Creek classes also. Registration: (415) 284-1024.

June 25 Computer Swap. Santa Clara County Fairgrounds, San Jose. Computer Swap America. (415) 366-9162.

June 27 PS/2 Course. San Francisco. Contact Data-Tech Institute at (201) 478-5400.

July 7 Time Line Workshop. Know How, Inc. San Francisco. Contact Sherri Davis, Symantec-Breakthrough Software, (415) 898-1919.

July 9 Computer Swap Meet. San Mateo County Fairgrounds. RK Productions. (800) 252-7927.

July 10 – 30 Future Fiction HyperCard Fiction Workshop CSU Summer Arts Course. Call (213) 590-5768 for information.

July 13 – 15 C: A Guided Tour Intensive Three Day Semionar. Handlery Hotel, Union Square, San Francisco. Miller Freeman Publications. Contact Bill Rutledge (415) 397-1881.

July 15 Time Line Workshop (Transition to Version 3.0). Know How, Inc. San Francisco. Contact Sherri Davis, Symantec-Breakthrough Software, (415) 898-1919.

continued

SUPER FAST AT 12 MHz

High quality American Designed, Engineered and American-Built, powerful AT 80286-12 MHz super performance computer systems for CAD/CAM workstations, scientific engineering, industrial, medical, local area networking, desktop publishing systems and more applications.

MSE 286-12 MHz

- The newest ZyMOS POACH/AT
- 80286 microprocessor, 6/12 MHz
- 512K RAM, expands to 1 MB
- 1.2 MB Teac floppy drive
- W.D. hard disk/floppy disk controller
- Clock/calendar with battery backup
- AT style keyboard
- 200 W power supply
- 8 expansion slots
- True Read/Write "0" wait state
- 72 hours burn-in test
- 16 MHz performance

OUR PRICE $895

☆ *Special Offer* ☆
Portable 286-12 MHz
Tower 386-20 MHz
$CALL

Same as above system with 10 MHz speed Our Price $845 1.44 MB Micro Floppy Drive $159

PC Week Editor's Choice

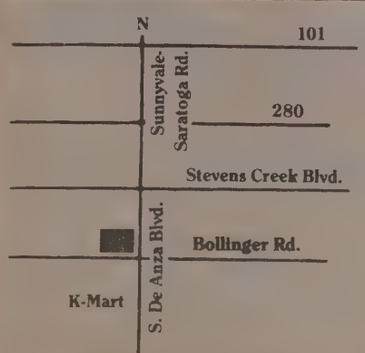
80386 20 MHz MODEL 40

- 80386 32-bit CPU, 20/8 MHz
- 1 MB high speed static column RAM
- 32-bit memory, expands to 10 MB
- W.D. hard disk/floppy disk controller (ESDI controller also available)
- Teac 1.2 MB floppy drive
- 44 MB fast hard drive (28ms)
- 200 W low noise power supply
- 101-key enhanced-AT keyboard
- Clock/calendar with battery backup
- Serial and parallel port
- Support 80287 & 80387 Xenix System V, OS/2, PC MOS 386
- Read/Write "0" wait state
- 25 MHz performance

Complete $2595 16MHz System $2395

EXPANSION OPTIONS

Mono Monitor & Graphic Card	$129
Color Monitor & Graphic Card	$329
EGA Monitor & Graphic Card	$529
Seagate ST-225 20 MB (65ms)	$269
Seagate ST-125 20 MB (28ms)	$299
Seagate ST-251 42 MB (38ms)	$399
Seagate ST-251-1 42 MB (28ms)	$499
Fujitsu ESDI 147 MB (23ms)	$1399
Maxtor ESDI 320 MB (16ms)	$3499
Seagate ST-138 30 MB (28ms)	$399
Seagate ST-4053 44 MB (28ms)	$599
Micropolis 1333 44 MB (28ms)	$599
Micropolis 1335 72 MB (28ms)	$849
Seagate ST4096 80 MB (28ms)	$899
1.2 MB Floppy Disk Drive	$109
360 KB Floppy Disk Drive	$89
1.44 MB 3.5" Micro Floppy Drive	$159
720 K 3.5" Micro Floppy Drive	$119
WYSE 700 & Monitor (1280 x 800)	$699
NEC Multisync II Monitor (800 x 600)	$599
NEC Multisync Plus Monitor 15"	$899
NEC Multisync XL Monitor 19"	$2099
Paraadise VGA Plus Card (800 x 600)	$279
Vega VGA Card (800 x 600)	$279
Everex VGA Card (800 x 600)	$249
Genoa Hi-Res EGA Card (800 x 600)	$199
ATI Professional Image Board	$799



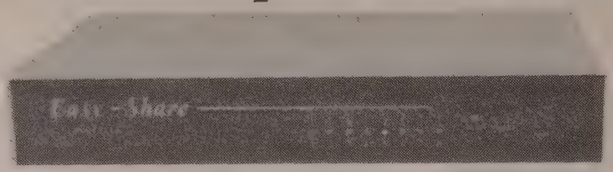
MS ENGINEERING, INC.

10601 S. De Anza Blvd., Suite 213
Cupertino, CA 95014

(408) 257-4249

Prices subject to change without prior notice.
Sale prices apply to C.O.D. only.

It's Easy To Share

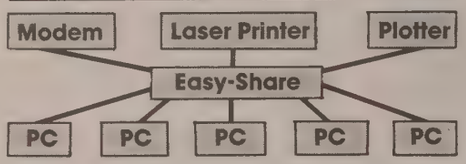


2 Year Warranty

Easy-Share
The Peripheral Sharing Solution

Now you can quickly and easily share your printers, plotters and modems with your computers. Easy-Share automatically buffers and routes your data to the desired output device, eliminating cable or diskette swapping and manual switchboxes.

Easy-Share doesn't require any special software to operate. It easily connects to your computer's serial or parallel ports and is compatible with all of your application software.



• Share up to 8 PCs and peripherals with Easy-Share

Easy-Share Gives You:

Easy Configuration
You can configure each port as "input" or "output"–allowing you to connect 7 computers to 1 printer, 6 computers to 2 printers, or any combination of up to 8 ports. And each port can be configured independently for Parity, Wordlength, Baud Rate, Input/Output operation as well as for "handshake" method (DTR/XON).

Easy Operation
Easy-Share automatically transfers data and performs any required switching. There are NO OPERATOR CONTROLS or switches to set. And, any or all "on-line" users can send documents at the same time. Buffer space is automatically allocated to insure maximum efficiency.

Easy Expansion
Easy-Share has 4 serial ports standard, and is expandable up to 8 ports. Plug-in interface cards allow for serial or parallel expansion. Plus, Easy-Share comes standard with 256K of RAM and is expandable to 1 megabyte of internal onboard RAM!

PLUS THESE OTHER FEATURES, FREE!

Bi-Directional Mode
Easy-Share supports a special bi-directional mode allowing the use of Modems, Plotters, or even the exchange of files between computers (requires user provided file exchange program).

Advanced Software Command Support
Easy-Share supports advanced software commands, including: Number Of Copies, Pause For Paper Change, Printer Select, Bi-Directional Modem Support, No Timeout (for Accounting Audit Trail Use), and others.

CALL TODAY AND SEE why Fortune 1,000 companies all over California have made Easy-Share their peripheral sharing solution.

FIND OUT HOW EASY (and inexpensive) it can be to share your peripherals in your own company with Easy-Share!

CALL NOW
(408) 748-9330

TANSTAAFL Manufacturing, Inc.
1800 Wyatt Drive, Suite 6
Santa Clara, CA 95054
(408) 748-9330

CHAMPION
BUSINESS ACCOUNTING SOFTWARE

"The General Ledger, Accounts Payable and Accounts Receivable of the Champion System belong in the top five list of integrated accounting products for microcomputers."
• **Computer+Software News**

"Many manufacturers preach ease of use and 'user friendliness.' The Champion comes as close to meeting these criteria as any product I have used."
• **Infoworld**

All 5 Modules (GL, AR, AP, Inventory, Payroll) $495

Ask about our training, installation & support service. Pricing subject to change without notice.

Computertime	San Francisco 3 Embarcadero Center **397-6776**	San Rafael 1115 Third Street **459-8080**

CALENDAR OF EVENTS *continued*

July 23 – 24 Time Line Workshop (Version 3.0). Know How, Inc. San Francisco. Contact Sherri Davis, Symantec-Breakthrough Software, (415) 898-1919.

July 26 SBT Introduction to dBASE IV Seminar. San Francisco. Contact SBT Corporation (415) 331-9900.

July 25 – 26 Four Short Courses On Systems Development: A PC Based Methodology. Sacramento. Contact TCA Training Institute at (408) 737-2665.

July 27 SBT Introduction to dBASE IV Seminar. San Jose. Contact SBT Corporation (415) 331-9900.

August 19 Time Line Workshop (Transition to Version 3.0). Know How, Inc. San Francisco. Contact Sherri Davis, Symantec-Breakthrough Software, (415) 898-1919.

August 20 Computer Swap. Santa Clara County Fairgrounds, San Jose. Computer Swap America. (415) 366-9162.

August 22 – 23 Four Short Courses On Systems Development: A PC Based Methodology. Sunnyvale. Contact TCA Training Institute at (408) 737-2665.

August 25 – 26 Time Line Workshop (Version 3.0). Know How, Inc. San Francisco. Contact Sherri Davis, Symantec-Breakthrough Software, (415) 898-1919.

August 29 – 30 Four Short Courses On Systems Development: A PC Based Methodology. San Francisco. Contact TCA Training Institute at (408) 737-2665.

September 8 Time Line Workshop (Version 2.0). Know How, Inc. San Francisco. Contact Sherri Davis, Symantec-Breakthrough Software, (415) 898-1919.

September 14 – 17 Seybold Desktop Publishing Conference. Santa Clara Convention Center. Seybold Seminars (213) 457-5850.

September 16 Time Line Workshop (Transition to Version 3.0). Know How, Inc. San Francisco. Contact Sherri Davis, Symantec-Breakthrough Software, (415) 898-1919.

September 22 – 23 Time Line Workshop (Version 3.0). Know How, Inc. San Francisco. Contact Sherri Davis, Symantec-Breakthrough Software, (415) 898-1919.

September 24 Computer Swap. Santa Clara County Fairgrounds, San Jose. Computer Swap America. (415) 366-9162.

*As a community service, **MicroTimes** lists trade shows, seminars, and other special events in the Calendar of Events free of charge on a space-available basis. To improve the likelihood of your listing's timely inclusion, please make sure we have the necessary information no later than the first of the month two months before the cover date of the issue in which you'd like it to appear (i.e. the deadline for the March issue, on the street in February is January 1). Send to: MicroTimes Calendar of Events. 5951 Canning St., Oakland, CA 94609.*

News about user group meetings and other regularly scheduled activities should be sent to User Group Network at the same address.

Faster than a speeding bullet...

SYSTEM--80286-Based PCs (clock speed in MHz/No. of wait states	CPU
AST Premium/286 (10/0)	**2.25**
IBM PC AT (6/)	**1.00**
IBM PC XT 286 (6/0)	**1.32**
IBM PC AT (8/)	**1.37**
IBM PS/2™ Model 50 (10/1)	**1.71**
IBM PS/2 Model 60 (10/1)	**1.72**

CPU measures main processor performance relative to the 6-MHz (Model 099) IBM PC AT.

Source: InfoWorld Hardware Benchmark System, as published in InfoWorld May 11, 1987.

The **AST Premium/286** personal computing system provides increased IBM AT-compatible computing power... *performing 50%* faster than traditional 8 MHz ATs.

...more powerful than a locomotive

Features include:

* 10 MHz 80286, keyboard selectable 10, 8, or 6 MHz.
* 1.2 Megabyte 1/2 ht floppy.
* 512k ram expandable to 2 MB in a single slot.
* 10 MHz 80287 socket support.
* 7 total expansion slots.
* MS Dos 3.21 and G.W. Basic.

AST Premium/286 Model 80 Business Computing System

Includes: AST Premium/286 Model 80 with 1 MB (exp. to 2 MB), Seagate ST 251-1 40 MB 28ms hard disk, Hercules Graphics Plus, Amdek 410 series monochrome monitor.

Diamond price: $2749

List: $3999

Configuration and testing included.

Showroom Now Open

Now see the AST Premium/286 Business Computing System at the new Diamond Software Computer Showroom. In addition to this system, there are desktop publishing and presentation workstations using other AST computers.

Diamond Software
HARDWARE AND SOFTWARE FOR CORPORATE AMERICA

Come in today and let us help you with a system that meets your needs.

433 HEGENBERGER ROAD, STE. D
(Look for the building with the blue roof at the corner of Hegenberger and Edgewater.)
(415) 430-3095

CORPORATE ACCOUNTS CALL:
(415) 633-2588

7916 Capwell Drive • Oakland, CA • 94621

Prices subject to change without notice. All trademarks apply to trademarked products and their respective companies.

On The Firing Line

PC PageMaker 3.0: The Desktop Publisher's Choice

By Stephan Wickham
and the Diamond Software Technical Team

Aldus Corporation has released a new generation of *PageMaker,* with many new features added. These new features stop cold most of the arguments over whether to buy *PageMaker* or Xerox's *Ventura*. There is no question that *PageMaker* controls the desktop publishing program market.

There are a number of reasons that *PageMaker* is the single best choice for most desktop publishing needs. Aldus offers absolutely super documentation with *PageMaker,* and it's usually very easy to find classes on *PageMaker* in major cities. Newsstands carry publications that focus on desktop publishing, and these magazines are packed full of very useful *PageMaker* tips. Large business and computer book stores also carry many third-party books on *PageMaker.*

New Features: Automatic Text Flow

Automatic text flow is a new feature of *PageMaker* 3.0 which was sadly lacking in earlier versions. Now it is possible to flow text in multiple columns over consecutive pages without having to manually control the process. In use this feature turns the pages automatically as *PageMaker* flows the text into the columns. If the program comes to the end of a document, it will create additional pages to place the remaining text. This is a vast improvement over clicking with the mouse at the bottom of a column and then clicking at the top of the next column to flow one column of text. This process had to be repeated over and over again during the document production. Now, with auto text flow, it becomes practical to work on long document production. It is possible to revert to manual text flow for jobs needing very fine control.

Text can now be automatically flowed around, over, or through graphics to create snappier looking page layouts. The previous version required users to go through a complicated series of manual steps to create the same effects, so that many users just resorted to manually pasting in their graphic elements or glued down fancy text patches after the output came out of a laser printer. X-acto knifes will receive much less use with *PageMaker 3.0.*

Users will also be liberated to experiment with more complicated designs. *PageMaker* will automatically flow text around graphics in a rectangular pattern. If you want the text to follow the shape of the graphic, it is very easy to click with the mouse and form little diamond shaped guides that let you define the text boundary. The graphic text flow tools let you precisely define the text flow. You can even control the amount of white space between the text and graphics (stand-off). Any graphics boundary definitions that are created are attached to the graphic element, so if the graphic is moved to another column or page, text will automatically flow around the graphic as you intended.

Style Sheets

Style sheets are now supported within *PageMaker,* allowing the user to set up standard formats for type styles, sizes and alignment for headlines, subheads, body copy and other text. This feature can save you a considerable amount of time in formatting your page layouts. Now you simply place tags in your word processing, database, or spreadsheet programs when the information for your document is originally created. *PageMaker* will interpret the tags into automatic format control.

Style sheets will help you maintain consistent-looking documents. This is especially important for the production of documents such as newsletters and catalogs. Style sheets consist of a collection of formatting commands which define the text in terms of its style, size, line spacing and placement. Each style command is given a different name, such as "headline1." Each style that you create becomes part of a Style Palette. The Style Palette can be made to pop up on the screen, so you can point and shoot with your mouse as you create new style sheets.

Users who import scanned photographs and paint program images will find the new *PageMaker* 3.0 image control system highly effective. Images scanned in gray-scale tag image file format (TIFF) and bit-map illustrations can be considerably modified. You can darken an image so it will stand out, or you can lighten an image so text placed over the top is readable. Contrast can be adjusted between an object and its background, in a manner similar to the controls on a black-and-white TV. For razzle-dazzle you can add special visual effects. You can pick a line screen and change the frequency and the angle of the lines that make up the line-screened image. Dot patterns can be made coarser, or dots can be added to make the artwork look like a glossy photo. (Photographs are best saved in TIFF format. When a photograph is saved in gray-scale TIFF, the image is comprised of true gray dots, rather than black-and-white dots that can only approximate shades of gray. This results in much crisper images within your finished layouts.)

Bitstream Fontware

PageMaker now contains Bitstream's Fontware, a font generation engine that produces typefaces from font outlines. Three font outlines are provided to get you started. You can use these in addition to the fonts contained in your printer. This is a great plus to users of non-scaling printers, such as the ones from Hewlett-Packard.

The Bitstream approach is far better than spending $200 or $300 dollars to buy one font cartridge that contains only four or five typefaces in fixed sizes. Your documents will look terrible if you can't scale your type to the proper size. The visual balance of your page layout will be thrown drastically off without the ability to use the proper size type. In the days of typewriters we might have lived with this circumstance, but there is no excuse to ignore the need for page composition systems that allow you to scale type.

PageMaker gives you three of Bitstream's font outlines. The typefaces are Times, Helvetica and Courier (Bitstream calls these Dutch, Swiss and Courier). These fonts can be scaled from 4 to 128 points; math symbols, international characters and some special characters such as trademark and copyright symbols are also included. Having Bitstream's Fontware allows you to create printer and screen fonts that accurately correspond to each other. Characters are displayed with amazing accuracy and line lengths are exact, so you can see how your copy will look and fit before you print it. Additional Bitstream fonts are available.

If you use soft fonts from sources other than Bitstream, you can use *PageMaker*'s soft-font installer. It will download the fonts to an HP LaserJet or other PCL printer. The commands are easy. Just specify your printer, place the disk with the fonts in your A drive, and select the one you want.

Color

If black-and-white document production is not exciting enough for you, try Aldus' new color support feature. *PageMaker* lets you use just about any color in the spectrum if you have the right color monitor.

There are three industry standard color models to choose from: HLS (Hue, Lightness, Saturation), CMYK (Cyan, Magenta, Yellow, Black) and RGB (Red, Green, Blue). You define the exact colors you want with slide bars. In the CMYK model, purple can be selected by adjusting the Cyan bar to 45%, the Magenta bar to 100%, the Yellow bar to 0% and the Black bar to 31%. Colors that you create are automatically added to a "color palette," which will stay on the screen for easy access.

After a color is defined, it is easy to point to a color on the palette and assign it to any text or object on the screen. You can color individual characters, or lines, screens, graphics or blocks of text. Photographs or bit-mapped images can be color tinted. Color overlays can be produced for your print shop after you have the colors adjusted the way you like on your computer screen. If you have a good quality laser printer or typesetting machine, you can create these overlays. The overlays will serve as the material from which your printer will make a complete color image.

PageMaker makes the overlays by creating a separate printout for each of the colors used by the color model you selected. Colors are represented by ratios and the blending of the three to four different overlays. *PageMaker* also puts the registration marks on each overlay to make it easy for your printer to line up the resulting images. The finished result will be super. Color can add a lot of life to an otherwise dull layout.

PageMaker can produce color slides if you do desktop based presentations. With a slidemaker attached to your system, you can make Technicolor 35mm slides or, with a color printer, make color transparencies. Your associates' eyes will pop out seeing the quality of your work. *PageMaker* is designed with future color technology built in.

Products by Aldus and fonts from Bitstream are available through Diamond Software at (415) 633-2588. If you require additional information or technical support call (415) 633-2589. You are invited to our new business computer products and CAD showroom at 433 Hegenberger Road, Suite D, Oakland, California — by the Oakland Airport. You can contact our showroom at (415) 430-3095. We are at your service.

At Diamond Software we recommend:

WordPerfect ~~4.2~~ 5.0 -- Corporate America's NEW word processing choice.

Diamond price: **$199** List: $495
(Limited offer good thru June 30)

Demanding corporate customers like Ford, Chrysler and TRW made **WordPerfect 4.2** the best selling word processor for the IBM-PC and compatibles.

Now 5.0 adds new features. Integrated text and graphics. Automatic redline and strikeout. Mixed fonts. Improved parallel columns...*all with extensive technical support*

In business for almost six years, at **Diamond Software** we know that great pricing is important. And...in addition to the lowest possible price on software, we can support all your hardware needs as well. Monitors. Hard Drives. Printers. Scanners. And computers from AST and WYSE.

Finally, you can be sure that any product purchased from **Diamond Software** receives our full support. Technical Manager, Stephan Wickham, and our technical team discuss innovations in the fast moving computer industry every month in **MICROTIMES.** Their insights can assist your decision making--while saving you time.

WordPerfect CORPORATION

GRAND OPENING

***Now you can see WordPerfect 5.0 at the* NEW DIAMOND SOFTWARE COMPUTER SHOWROOM IN OAKLAND**

433 HEGENBERGER ROAD, Ste. D

(415) 430-3095

SPECIAL OFFER
(good thru June 30)

We would like to send you a collection of reprints from **MICROTIMES** written by Stephan Wickham, our Technical Manager ...*Just send us $1.00 (refundable with purchase) and the coupon at right.*

Diamond Software has the technical knowledge to back the products we sell.

☐ Send me _____ copies of WordPerfect 5.0 at $199 a copy plus 7% sales tax and $5.00 shipping and handling. Please send a company purchase order along with your check.

☐ Send me the collection of Stephan Wickham's, ON THE FIRING LINE, reprints from **MICROTIMES.** *I am enclosing $1.00 which will be applied towards a future purchase.*

Name _____
Title _____
Company _____
Address _____
City _____ State ____ Zip _____

Diamond Software 7916 Capwell Drive, Oakland, CA 94621

Diamond Software

HARDWARE AND SOFTWARE FOR CORPORATE AMERICA

CORPORATE ACCOUNTS CALL:
(415) 633-2588

7916 Capwell Drive • Oakland, CA • 94621

By Paul Hoffman

AT&T Announces UNIX Graphical Interface; New OS/2 Developer Kits Ship; Sun Announces 386 Machines; Autodesk Acquires Xanadu

Plus: More Look And Feel

AT&T Announces New User Interface For UNIX.

In what could be the death of "grep" and "ls," AT&T joined forces with many of the major UNIX software vendors to announce Open Look, a new user interface for UNIX. AT&T hopes that Open Look will make UNIX systems much more attractive to beginning users. The interface will be available on systems starting next year as part of UNIX System 5.4. Open Look defines the user's interactions with both the operating system (for instance, to manage files and start programs) and with applications. AT&T will sell programming toolkits to software manufacturers so that they can make their programs work in the Open Look guidelines.

The Open Look interface requires a graphic display and a mouse. Since most current UNIX systems have neither, it is likely that the transition from the current text-based applications will take a long time. The Open Look interface has many features in common with Apple's Macintosh interface, but it also has many improvements, such as the ability to "pin down" often-used elements on the screen. It is likely that Open Look will take a significant amount of overhead in the CPU and will thus be first introduced on higher-powered machines.

In order to generate excitement for Open Look, AT&T announced support for the interface from many non-UNIX vendors such as Ashton-Tate and Lotus. Both companies expressed the belief that the new standard makes it much more likely that they will develop products for UNIX. Although such products are sure to be years away (since Open Look will not be widely available for over a year), they indicate that many MS-DOS and Macintosh developers may be swayed towards UNIX if it looks like the customer base can grow faster than at its current rate.

The people not supporting the announcement were almost as interesting as those supporting it. Conspicuously absent from the list of supporters were Microsoft and Apple. Since Microsoft is the developer of XENIX, one of the most popular UNIX systems, its non-committal to Open Look could hurt Open Look's chances of catching on. Microsoft is already working with AT&T to make XENIX and main-line UNIX more compatible, and they are expected to release a new version of XENIX this summer that completes that goal. However, since almost all PC and PC-compatible systems running UNIX are running XENIX, Microsoft's support of Open Look could be critical to its wide-spread success. Apple likewise made no announcement of support, partially due to the newness of its A/UX system and the fact that A/UX already can take advantage of the Macintosh user interface.

In a probable response to the Apple vs. Microsoft suit, AT&T made the origins of Open Look very clear: it was primarily developed at Sun with AT&T's help. Sun announced that it had licensed the visual copyrights to Xerox's graphical user interface for inclusion in Open Look. In presentations given at the announcement, it was clear that AT&T was not trying to clone the Mac user interface and had included features that made it clear that the interface was visually quite different. Sun and Xerox announced a joint technology agreement last year in which Sun would acquire some of Xerox's technology in exchange for Sun hardware. It was announced that Xerox intends to buy or manufacture over $200 million in Sun hardware over the next five years.

Microsoft Ships Developer Versions Of OS/2 1.1 And Presentation Manager

Helping to ease the worry about its commitment to finish the Presentation Manager this fall, Microsoft released its latest version of the OS/2 Software Development Kit (SDK) with early pre-release copies of version 1.1 and the Presentation Manager. Although both pieces of software have many significant bugs, they allow software developers a chance to get started on developing software that will work closely with the new environment when it is released. Microsoft acknowledges that the software in the SDK is much slower than the release version will be.

Many developers were concerned that Apple's suit against Microsoft for the visual copyright of *Windows 2* would affect the release of the Presentation Manager, and Microsoft has gone to great lengths to assure them that it won't. According to Microsoft, "In appearance, [MS OS/2 Presentation Manager] is identical to the current versions of Microsoft *Windows* version 2.0." Microsoft also claims that its Presentation Manager "is an inherent part of the MS OS/2 operating system." Thus, it is likely that when the final version of Presentation Manager is shipped, it will become a part of Apple's suit against Microsoft since it uses the same visual interface that Apple claims infringes on the Macintosh interface. Since IBM has announced its intention to market the Presentation Manager as well, this could bring IBM into the suit as an additional defendant, if Apple chooses.

The OS/2 SDK costs $3000 and comes with dozens of manuals (over 10,000 pages of documentation), as well as videotapes about programming issues and 63 diskettes. Microsoft, 206/882-8080.

Sun Announces New Model Based On 80386; Runs UNIX And MS-DOS Programs

If it's from Sun, you know it runs UNIX. However, Sun's recent announcement of its 386i series of computers shows how deep that commitment is. Sun now supports UNIX on three different CPUs: the Motorola 68000 family, the SPARC family, and now the Intel 80386. The new computers run MS-DOS applications as well as UNIX applications, and can pass data between applications running in each operating system. The hardware supports the AT bus so that standard cards made by other manufacturers can be used in the computers.

Sun stressed that the machines are not PCs and are not priced like PCs. They are, according to Sun, "corporate workstations" that cost between $8,000 and $14,000. The are meant for high-end users who want a single workstation that can run MS-DOS programs but also take advantage of the UNIX features that are built into Sun's other systems, such as transparent networking. The systems will run MS-DOS version 3.3 and can run many MS-DOS applications simultaneously. The MS-DOS programs will run under SunOS, a UNIX derivative. SunOS has a graphic user interface that uses windows and icons so that much of UNIX's unfriendliness is hidden from the user.

There are two models in the 386i series. The 150 has a 20 MHz CPU and hold up to eight megabytes of RAM. The 250 has a 25 MHz CPU; that chip was just announced by Intel days before Sun's announcement. The 250 also has 32K of static cache to speed up the processor and can hold up to 16 megabytes of RAM. Both models come with Sun's large monochrome monitor. They also use Intel's new 82380 I/O chip that makes communications to peripheral devices much faster. Memory boards and graphics frame buffers can plug directly into the CPU board to greatly increase the

Paul Hoffman is a freelance writer who has written five books about computers.

PC Plus Consulting Presents:

Only $2.99 Per Disk

FREEWARE

Only $2.99 Per Disk

Public Domain and User-Supported Software for IBM" and Compatibles
Programs and Utilities to meet all your computing needs.

ADULTS ONLY

❒ **ADULTS ONLY/1 (147)** -German porno. great animated graphics. CGA req.
❒ **STRIP POKER (148)** - Pick your female opponent & watch out. CGA required.
❒ **X-RATED PRINTMASTER (149)** - X-Rated graphics for Printmaster Plus.
❒ **X-RATED PRINTSHOP (150)** - X-Rated graphics for Printshop.
❒ **BAD-BAD (289)** - Naughty adventure game. CGA required.
❒ **ASTRO-[bleep] (297)** - Dirty arcade game. CGA required.
❒ **NASTY GIRL (435)** - The name says it all... CGA required.
❒ **MAXINE (497)** - Must see to believe.... CGA required. EGA suggested.
❒ **X-RATED COLOR SHOW (496)** - Some lovely ladies. CGA required. EGA better.

BUSINESS

❒ **EZ-FORMS Rev. C.24 (66)** - Menu driven forms generator. misc. skeleton forms.
❒ **EASY PROJECT V1.2 (440)** - Complete project management system. Excellent.
❒ **REAL ESTATE ANALYST (83)** - Menu driven. mortgages. interest. etc.
❒ **CK - CHECKBOOK V3.1 (79)** - Full featured checkbook program with reports.
❒ **BIDS 'N QUOTES V0.9 (463)** - Prepares cost estimates & proposals. Does labor. material. sub-contractor costs. etc.
❒ **BUSINESS LETTERS (303 & 304)** - (2 disk set) 650 business letters to fit all your needs. Edit w/ any word processor.
❒ **MR. BILL V3.2 (311 & 312)** - (2 disk set) Time & billing package: costs. credits. reports. audit trail. etc.
❒ **PC-PAYROLL V2.3 (464)** - Menu driven payroll system: 100 employees or less.
❒ **RENTAL PROPERTY (318)** - Keeps track of rental activity. Menu driven.
❒ **SLICWORKS (321)** - Framework clone. Integrated database. spreadsheet. word processor. & communications.
❒ **PARTS INVENTORY CONTROL (479)** - Tracks inventory of a parts & service business: qty. ordered. supplier. etc.
❒ **DOCKETMINDER V1.2 (448)** - Maintain docket for lawyer or law firm.
❒ **FINANCE MANAGER V4.0 (77)** - Accounting package for business or personal finances. Double entry system.
❒ **SOAR V1.92 (449 & 450)** - (2 disk set) Accounts receivable program. Handles a variety of services or products.

COMMUNICATIONS

❒ **RBBS BULLETIN BOARD V15.1 (290 - 292)** - (3 disk set) Turn your computer into a RBBS. Industry standard.
❒ **QMODEM V3.1 (293 & 294)** - (2 disk set) Full featured modem program. 200 number dialing directory. etc.
❒ **PROCOMM V2.42 (53 & 54)** (2 disk set) Menu driven modem program. excellent documentation: still one of the best.
❒ **BOYAN VD3 - (467)** - Modem program that has received great reviews by all.

DATABASE

❒ **FILE EXPRESS V4.01 (33 & 34)** - (2 disk set) Menu driven. easy to use database for beginners to experienced.
❒ **WAMPUM V3.1B (37 & 38)** - (2 disk set) Menu driven dBase III clone. supports functions of dBase. Knowledge of dBase suggested. Latest update.
❒ **PC-FILE + V2.0 (493 - 495)**- (3 disk set) Full-featured database: help screens. menus. macros. One of the best.
❒ **DBASE III UTILITIES (349)** - Contains utilities for household inventory. C language & Desktop. etc. dBase III req.
❒ **dGENERATE V1.0 (511)** - Screen & source code generator by Tom Rettig. dBase III required.

EDUCATION

❒ **COMPOSER (3)** - Create. save. edit. play. & print your music. Nice...
❒ **LETTERFALL V1.1 (119)** - Improve your touch typing skills: 16 levels.
❒ **BEGINNING SPANISH (121)** - Teaches vocabulary. phrases. etc. Basic required.
❒ **THE WORLD 3D (127)** - Display maps of the world. CGA required.
❒ **FUNNELS & BUCKETS V 2.0 (130)** - Great learning game: add. subtract. multiply. & divide. Ages 5 - 10.
❒ **ERYN'S ABC'S (131)** - Teaches alphabet & numbers. Computerized Etch-a-Sketch. Ages 2 - 6. Basic required.
❒ **MATH-WHIZ (188)** - Teaches various math operations. Ages 5 and up. You choose the level. Basic required.
❒ **AMY'S FIRST PRIMER (133)**- Alphabet. numbers. counting. shapes. matching. etc. Ages 4 - 8. CGA & Basic req.
❒ **SAN MATEO EDUCATION (136)** - Teaches math. chemistry & geography. Ages 8 - 16. CGA required.
❒ **SPELLING BEE (138)** - Grades 1 - 12. CGA & Basic required.
❒ **POLYGLOT V6.01 (139)** - Vocabulary builder. Grades 7 - college. Excellent.
❒ **ANIMAL MATH/MOSAIC (181)** - Count objects & graphic learning tool. Ages 4 & up . CGA required.

EGA PROGRAMS

❒ **EGA RISK (216)** - The game of world domination. Also contains EGA Roids.
❒ **EGA UTILITIES/1 (260)** - EGA demos. change fonts & size of letters. etc.

GAMES

❒ **SLEUTH V4.1 (89)** - Murder mystery game similar to the board game "CLUE".
❒ **BLACKJACK (95)** - Advanced blackjack game with tutor. multiple players. Best one yet. CGA or Hercules.
❒ **MONOPOLY V6.7 (106)** - Just like the board game. 2 to 4 players. CGA req.
❒ **DUNGEONS & DRAGONS V1.1 (205)** The Classic Game. Can you survive?
❒ **LAS VEGAS (116)** - Craps. Roullete. Poker. & more. CGA req., Basic on some.
❒ **3D CHESS V1.01 (215)** - Excellent chess game. Switch between 2D & 3D.
❒ **SAM SPADE V1.0A (226)** - Great detective game. Mazegame: creates mazes.
❒ **SOLITAIRE (211)** - 4 different games. Nice graphics. CGA required.
❒ **SUPER PINBALL (212)** - 5 different games. CGA required.
❒ **WORDPLAY (367)** - Wheel of Fortune clone. You provide the prizes. CGA req.
❒ **HANGMAN (91)** - 2 versions of the ever popular game & learning tool.
❒ **DIGITAL LEAGUE BASEBALL (344)** - Pick your team & players. Nice graphics.
❒ **MINIATURE GOLF (505)** - 18 hole golf course with graphics.

GRAPHICS

❒ **PC-ART V1.0 (199)** - Paint program. easy to use. CGA required.
❒ **LIGHTING PRESS (266)** - Printmaster Plus clone. flyers. greeting cards. etc.
❒ **CALENDAR CREATOR (350)** - Create & print your own monthly calendar.
❒ **PRINTMASTER GRAPHICS (319)** - 3 libraries of graphics for Printmaster Plus. Requires Printmaster Plus.
❒ **PRINTSHOP GRAPHICS (320)** - 3 more libraries of graphics for Printshop. Requires Printshop.
❒ **STREETS ON A DISK (437)** - **DEMO** Program. Map of LA county & various points of interest. CGA or EGA required.
❒ **CAD CURVE DIGITIZER (339 & 340)** - (2 disk set) Excellent all purpose CAD program. Requires CGA or EGA. **Order Disk #'s 351 & 352 for Hercules Mono.**
❒ **DANCAD 3D V2.0B (424 & 425)** - (2 disk set) Advanced 2D/3D drafting program. Stereoscopic 3D wire frame animation. EGA. CGA. Hercules. 640k req.
❒ **EGA TROPICAL FISH (427)** - An aquarium on your computer screen. EGA required. Also contains CGA fish program.

LANGUAGE

❒ **TURBO "C" TUTOR (489 & 490)** - (2 disk set) 14 lesson tutorial : learn to program in "C" language.
❒ **"C" LANGUAGE V2.1 (299 & 300)** - (2 disk set) Complete programming environment. Source. compiler. samples.
❒ **WINDOW BOSS (322)** - State-of-the-art screen handling techniques for "C" language. Pop-up windows. menus. etc.
❒ **TURBO PASCAL TUTOR (20)** - 17 lesson tutorial with samples. etc.

MISCELLANEOUS

❒ **STRESS & SHRINK (74)** - Stress - stress test. Shrink - personality analysis.
❒ **HORSERACING (343)** - Handicapping for thoroughbreds.
❒ **FAMILY TIES V1.15 (154)** - A genealogy program for the amateur or pro.
❒ **ASTROLOGY V9.5 (284)** - Read your own chart from stars. moon. etc.
❒ **LOTTO # GENERATOR (159)** - Advanced techniques to win big $$$.
❒ **FREEWILL V1.0 (171)** - Valid WILLS for California. Easy to fill in.
❒ **FASTBUCKS (191)** - Menu-driven home finance package. Easy to use.
❒ **BIORHYTHM (194)** - Calculate & print your own monthly charts.
❒ **TENANTS RIGHTS (196)** - The 'Bible' for California renters. **A MUST.**
❒ **MEALMATE (332)** - Nutritional database for meal planning.
❒ **HEALTH RISK (331)** - Diagnose your own ailments.
❒ **AIRPLANES (398)** - Print paper airplanes. fold-em and let 'em fly. Basic req.
❒ **RECIPES V1.0 (445)** - Over 125 recipes. adjust serving sizes from 1-99.
❒ **LITTLE BLACK BOOK (441)** - Creates pocket sized address book. Prints mini-alphabetized pages.
❒ **TIMESAVER (442)** - Create daily/monthly calendar of appointments.

PRINTER UTILITIES

❒ **LQ V2.1 (509)** - Produces high quality text on dot matrix printers. Multiple fonts with print spooler.
❒ **LASERJET FONTS/I (327)** - 30 + downloadable fonts for Laserjet Plus/II.
❒ **LASERJET FONTS / II (471 & 472)** - (2 disk set) More downloadable fonts for HP Laserjet Plus/II. Helvetica. Script. etc.
❒ **LASERJET FONTS/UTILITIES (328)** - Contains 'Pamphlet' (sideways printing) & misc. other utilities & fonts.
❒ **PRINTPRO V1.2 (468)** - Change printer operation from within ANY application at ANY time.

SPREADSHEET

❒ **PC CALC V3.0 (27)** - Complete Spreadsheet program. Buttonware.
❒ **LOTUS 123 PROGRAMS (28 - 32)** -(5 disk set) Contains as many applications and utilities that we could find. Requires Lotus 123 program.
❒ **LOTUS 123 TUTOR (177)** - Beginning tutorial for Lotus 123. Various worksheets. Requires Lotus 123.
❒ **AS EASY AS V3.0 (302)** - Lotus clone. 52 column sheet. graphing. supports functions of 123. "WKS" files. etc.

UTILITIES

❒ **DISK COMMANDO V2.0 (218 & 219)** - (2 disk set) Norton Advanced Utilities clone. Too many features to list.
❒ **SIM-CGA (220)** - Great for most programs that need color (CGA) to run
❒ **DOS HELP (255)** - Help screen for DOS commands. functions & batch files at your fingertips. For DOS 3.XX
❒ **DOS TUTORIAL V4.2 (256)** - Menu driven tutorial that teaches DOS commands. terms. & functions. A MUST.
❒ **BEGINNERS (257)** - The basics of using most public domain software.
❒ **LIST V6.2A (274)** - Best utility for viewing documentation or any ASCII file.
❒ **PC MAGAZINE (277)** - Over 30 great utilities. rated by PC magazine.
❒ **DESKMATES V1.01 (278)** - Sidekick like utility plus more features.
❒ **AUTOMENU V4.01 (280)** - Access programs. batch files. DOS commands. etc. Best shareware menu program.
❒ **STILL RIVER SHELL V2.36 (369)** - Excellent directory & file management utility.
❒ **FLASHBAK V1.56 (217)** - Menu driven hard drive backup system.
❒ **BATCH TUTOR (223)** - Make your computing easier & foolproof.

WORD PROCESSING

❒ **SIDEWRITER (6)** - "Sideways" printing: great for spreadsheets.
❒ **RELIANCE MAILING LIST V2.0 (161)** - Easy to use. menu-driven. labels. mail-merge. etc. 32.000 names maximum.
❒ **PC-WRITE V2.71 (9 & 10)** - (2 disk set) Full featured word processor: all the features of the expensive one's.
❒ **LETTERHEAD (69)** - Create and print your own letterhead on letters and envelopes. IBM/Epson comp. printer req.
❒ **GALAXY V2.3 (11)** - Easy to use word processor: menus & quick keyboard commands. Lots of features.
❒ **PC TYPE + (373 - 375)** - (3 disk set) A powerful word processor with full screen editing. mail merge. 100.000 word dictionary. on-screen help. etc. Buttonware.

ORDER FORM

Please print disk numbers

___ ___ ___ ___ ___

___ ___ ___ ___ ___ -

___ ___ ___ ___ ___

NAME _____

ADDRESS _____

_____ _____

CITY _____ ST ___ ZIP _____

PHONE (_____) _____ ___

Minimum order 3 disks.
Buy 10 disks get eleventh *FREE*
Buy 20 get 2 *FREE*

# of disks ____ @ $2.99 = _____

Calif. Sales Tax (6.5%) = _____

Shipping & Handling= 3.00

TOTAL = $ ========

Mail order form & check or money order to:

PC Plus Consulting
1466 Springline Drive
Palmdale. CA 93550

(805) 273-0300
Call or write for free catalog.
Hours: M-Sat, 9 am - 5 pm.
3.5" media - $3.99 ea.
Sorry, no VISA, MC or COD's.
MTS688

Cost and Quality . . . the Rose Hill Compatibles!

On-Site Service and Leasing Available!

ATROSE MODEL 1800

IBM AT Compatible
80286, Runs at 6 or 8MHz
512K Expandable to 1 MB
Floppy/HD Controller
1.2 MB Floppy Drive
192 Watt Power Supply
AT Style Keyboard
200 Page Manual
48 Hour Burn-In & Test
One Year Warranty
MADE IN U.S.A.

UNIT PRICE
$875.00
(Add $125 for 10 MHz)

ATROSE MODEL 1700

IBM AT Compatible
80286, Runs at 8 or 12MHz
1 MB on Board
Floppy/HD Controller
1.2 MB Floppy Drive
192 Watt Power Supply
AT Style Keyboard
Small Footprint
200 Page Manual
48 Hour Burn-In & Test
One Year Warranty
MADE IN U.S.A.

UNIT PRICE
$1,275.00

XTROSE SUPER TURBO

IBM XT Compatible
4.77 or 10MHz
AT JR. Style Case
Lock, Reset & Turbo Switch
256K on Board, Expandable to 640K
360K Floppy Drive
Floppy Adaptor
8 Slots
150 Watt Power Supply
On Year Limited Warranty
Full Documentation
Burned In & Tested

UNIT PRICE
$425.00

386 ROSE MODEL 81 TOWER SYSTEM

80386, Runs at 20 MHz
1 MB Expandable to 2 MB on Board
LSI Logic Support to 16 MB 32 Bit memory
PC AT BUS Timing for Adaptor Compatibility
Socket for 80387
Socket for 80287
EGA Graphics on Board
Support 640 × 480
System & EGA BIOS Executed in 32 Bit Memory
EGA BIOS Supports Extended Video for Multisync
32 Bit Slot
2 Serial Ports
2 Parallel Ports
Floppy/HD Controller
1.2 MB Floppy Drive
Enhanced RT Style Keyboard
200 Watt Power Supply
Burned-In & Tested
Documentation
One Year Limited Warranty
MADE IN U.S.A.

UNIT PRICE
$2649.00

ROSE HILL SYSTEMS

Look to the Rose . . .

4865 Scotts Valley Drive Scotts Valley, CA 95066
CA Call: (408) 438-3871 Outside CA, Call: (800) 248-ROSE Tech Support, Call: (408) 438-3939

No Surcharge for VISA or MasterCard TERMS: Cash, VISA, or MasterCard. C.O.D. and Company Check on Approval.
Because of our Low Prices, all sales are final. A 15% charge will be applied for all unauthorized returns. Prices subject to change without notice.
IBM, AT, and XT are registered trademarks of International Business Machine Corporation. NEC Multispeed EL is a registered trademark of NEC Corporation.

Ask About Our New VNA Multi-User, Multi-Tasking System

386 ROSE MODEL 3800

80386 Runs at 20MHZ
SI = 21.5
1 MB Expandable to 2 MB on Board
Supports 16 MB 32 Bit Memory
PC AT BUS Timing for Adaptor Compatibility
Socket for 80387
Socket for 80287
EGA Graphics on Board
Supports 640 × 480 Multisync Extended Graphics
System & EGA BIOS Executed in 32 Bit Memory
32 Bit Slot
2 Serial Ports
2 Parallel Ports
Floppy/HD Controller
1.2 MB Floppy Drive
Enhanced RT Style Keyboard
200 Watt Power Supply
Burned In & Tested
Documentation
One Year Limited Warranty
MADE IN U.S.A.

UNIT PRICE
$2349.00

NEC MULTISPEED EL

(2) 3.5″ Floppies
V30 CPU 9.54MHz
640K
6 Built-In Programs Including DOS
Compatible with Standard PC Software
NiCd Battery Pack
One Year Limited Warranty
Options include:
2400 BD Modem
20 MB Hard Disk

UNIT PRICE
$1,899.00

ATROSE 1800B

IBM AT Compatible
Runs at 10MHz 0 Wait
512K Expandable to 1 MB
Floppy/HD Controller
1.2 MB Floppy Drive
AT Style Keyboard
192 Watt Power Supply
2 Serial Ports
2 Parallel Ports
Reset Switch
200 Page Manual
48 Hour Burn-In & Test
One Year Limited Warranty
MADE IN U.S.A.

UNIT PRICE
$1,149.00

386 ROSE MODEL 3000

80386 16 MHz
1 MB with 64K Ram Cache
LEDs for Speed, Power, and H.D.
8 Expansion Slots
Floppy/HD Controller
1.2 MB Floppy Drive
AT Style Keyboard
Front Panel Reset
200 Watt Power Supply
48 Hour Burn-In & Test
One Year Limited Warranty
MADE IN U.S.A.

UNIT PRICE
$1,799.00

SYSTEM OPTIONS:

Mono System, add	125.00
Color System, add	325.00
EGA System, add	525.00
XT HARD DISKS	
20 MB System, add	$299.00
30 MB System, add	$325.00
40 MB System, add	$399.00
AT HARD DISKS	
20 MB System, add	$250.00
40 MB System, add	$425.00
60 MB System, add	$575.00
80 MB System, add	$850.00
150 MB System, add	$1999.00

Send for Rose Hill Catalog * Hundreds of Other Items!

PRODUCTIVITY.
Imagine if Mozart were alive today how technology might maximize his creative genius. The production process has always maintained the same goals: shaping creative ideas into a finished product. Today's technology not only allows you to be more creative, but more efficient in your productions through the use of automation, synchronization and computer sequencing and editing. And at remarkably affordable costs.
Whether your needs are for creative music, professional recording, broadcast, production or post-production, Leo's Audio and Music Technologies is uniquely suited to supply your equipment needs. Leo's incomparable selection, systems interfacing, product training and professional services (including maintenance & customization) are just what you need to maximize your genius.
leo's audio and music technologies
Anticipating the needs of musicians and audio professionals since 1956.
5447 TELEGRAPH AVENUE • OAKLAND • CA 94609 • (415) 652-1553

IBM XT's, AT's, COMPATIBLES, LAPTOPS AND PRINTERS
SCANJETS • LASERJETS • MONITOR PROJECTORS • TOSHIBA T3200 & T5100

RENTALS & RENT TO OWN

Daily • Weekly • Monthly & Quarterly Rates
FOR MORE INFORMATION REGARDING OTHER PRODUCTS AND SERVICES PLEASE CALL

Computertime

San Francisco
3 Embarcadero Center
Corner of Clay & Davis
397-6776

San Rafael
1115 Third Street
Between A and B Streets
459-8080

flow of information; standard AT boards can also be used at a slower rate. Sun Microsystems, 415/960-1300.

NEC Introduces New Intel-Compatible Chip

Feeling that its legal position against Intel is strong, NEC introduced a new chip in the V30 family, the V33, which runs four times faster than current V30 chips. The V30 is a 16-bit microprocessor that works almost identically to Intel's 80286 chip, the CPU for IBM PC-ATs, AT clones, and the most popular models in IBM's PS/2 series. In a suit begun in 1984, Intel claims that NEC's chips are illegal copies of Intel's designs. Since the V33 is much faster than the current crop of 80286 CPUs, its presence will put pressure on Intel to beef up its 80286 line. The V33 will be available to manufacturers in sample quantities within a few months and in production quantities by the end of this year. NEC, 415/960-6000.

Apple Loses Ground In Bid To Stop Brazilian Mac Copy

A federal judge in Brazil has allowed a computer manufacturer to continue to import parts in order to make a copy of Apple's Macintosh 512. Unitron was recently prohibited by the government's computer regulatory commission, SEI, from manufacturing the computer. Unitron admits that the computer is a direct copy of Apple's product, including direct copies of the system software and ROM chips. The judge's ruling appears to be on a technicality, but it reflects Unitron's claim that the SEI's rejection of its application to manufacture the computer was based on politics instead of technical issues. The United States has threatened trade sanctions against Brazil if Unitron is allowed to manufacture the Mac copy, and it is widely believed that the U.S. will follow through on the threats to set an example for other advancing third-world countries. Apple hopes to reverse the federal court ruling in the near future.

Autodesk Acquires Xanadu

Hypertext may be going legit. In a move that surprised almost everyone, Autodesk (makers of *AutoCAD* and related products) purchased 80% equity in Xanadu and announced that they expect to have commercial products available in less than two years. Xanadu, led by Ted Nelson, is developing a hypertext system that allows universal access to linked documents (see the April *MicroTimes* for a lengthy interview with Nelson). Although hypertext is far afield from Autodesk's computer-aided design packages, Autodesk sees the acquisition as a good move. It is likely that Xanadu concepts will appear in future *AutoCAD* packages; for example, you might be able to select a subassembly in an object and instantly find the drawings for that subassembly.

Xanadu is also very happy with the deal. The cash infusion will help Xanadu in the final steps of commercialization of the technology, which has been slowed due to lack of resources. Xanadu will operate independently from Autodesk, although Autodesk executives will sit on the Xanadu board of directors. The first product from Xanadu will be a preliminary version of the Xanadu Hypertext System for research groups and front-end developers. Autodesk, 415/332-2344.

Xerox "Secure" Network For Navy Apparently Not So Secure

In an embarrassing admission, the Navy has acknowledged that the local-area network LAN security system being installed in workstations on many Navy ships can be easily penetrated by anyone attaching their computer to the LAN. The sec-

You Can Whisper About How Good This Printer Is.

That's because Toshiba's P321SL Printer will raise your productivity, not your voice. It has a selective quiet mode and standard features you will rave, but not yell about. Taking full advantage of a 24 x 42 character matrix that's unequaled in the industry, other 24-pin printers, (not to mention any 9-pin relatives), will have to play follow the leader.

Toshiba built it because you asked for it.

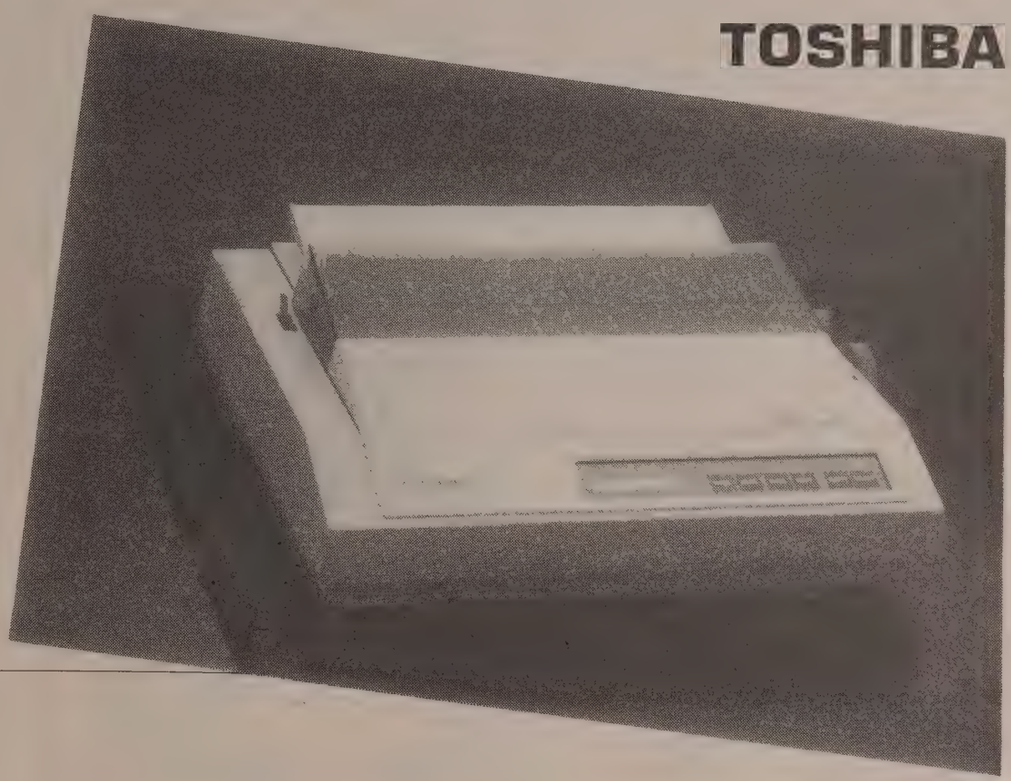
"MAKE IT EASIER TO USE." Say goodbye to the DIP switches in your life with front panel selection of type fonts, pitch, emulation, quiet mode and more.

"BE SURE IT HANDLES LOTS OF SOFTWARE." The P321SL handles practically any software, so you won't have to pay extra for exotic print drives. With a finger-tip you can choose from three standard emulations: IBM PROPRINTER, QUME SPRINT 11 or TOSHIBA P351. You can create truly unique text with the selection of five resident fonts, two more via the front leading card slot and two more from disk.

"PROVIDE ENHANCED PAPER HANDLING." Forget about paper changing hassles. The fan-fold bypass feature lets you feed single sheets without pulling out the continuous form paper. Plus, with the auto-load lever you can position either type of paper quickly and precisely.

"KEEP IT AFFORDABLE." For slightly more than a 9-pin model, you can enjoy the printer you've designed yourself. The P321SL retails for $749.

"GIVE IT ATTRACTIVE STYLING." At a streamlined 16.3"W x 3.9"H x 15"D and only 17 lbs., it's the heavyweight champ pound for pound. You get great graphics with resolution as high as 180 x 360 DPI. It can also use compressed print so you can put 132-column spreadsheets on convenient letterhead size paper. Toshiba is where standard features set industry standards. Consult your nearest dealer listed below to get your printer today.



Now the printer that you designed is ready at one of the dealers listed below!

Direct Computer Resources
1070 Shari Circle, #200
Concord, CA 94518
415 685-2025

Infomax Computers
1310 Mt. Diablo Blvd.
Walnut Creek, CA
415 356-6565

Winner's Circle
2618 Telegraph
Berkeley, CA 94705
415 845-4814

California Computer Options
2213 Shattuck Ave.
Berkeley, CA 94704
415 486-8292

Micro-Tech International
5835 Doyle St., Suite 101
Emeryville, CA 94608
415 658-1433

Monarch Computers
863 San Pablo Ave.
Albany, CA 94706
415 526-7741

Infomax Computers
761 E. Blithedale at the
Alpha Beta Center
Mill Valley, CA
415 929-2295

Infomax Computers
601 Van Ness Ave.
Civic Center Area
San Francisco, CA
415 929-2250

Micro Menders
81 Lansing St., Suite 101
San Francisco, CA 94105
415 543-0500

Western Computer Group
858 Burlway Road
Burlingame, CA 94010
415 340-1781

Crescent Computers
3531 Ryder
Santa Clara, CA 95051
408 738-2480

Connective Micro Systems
1257 B Oakmead Parkway
Sunnyvale, CA 94086
408 739-1170

Custer Computers
811 Castro St.
Mountain View, CA 94041
415 969-8890

ERA Electronics
4500 El Camino Real
Los Altos, CA 94022
415 948-4500

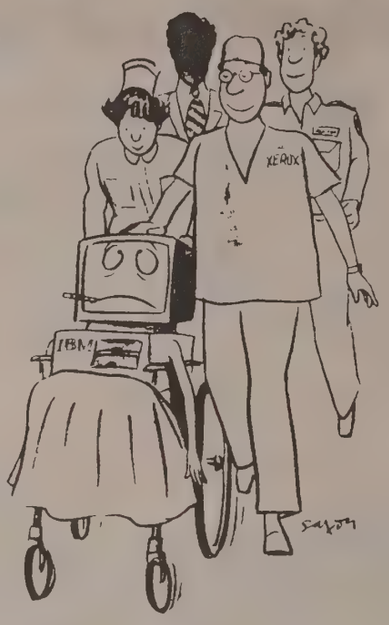
BROUGHT TO YOU BY

Gates DISTRIBUTING

XEROX

Our PC system Emergency Room is ready for you.

It's your nearby AMERICARE Computer Repair Center. Prompt, guaranteed Xerox service for your PC systems, whether or not they're from Xerox.



You've got important business to finish, and, suddenly, your PC system goes down.

That's a real emergency. . . but now, Xerox has an Emergency Room for the quick, professional repair you need.

AMERICARE Computer Repair Center provides intensive care for many leading brands of personal computers, including IBM, AT&T, and Compaq.

And equally intensive care for many printers, like Epson, Okidata, Diablo and more, plus disk drives, monitors and peripherals.

Usually within 48 hours, often faster, with a choice of carry-in, pick-up and delivery, or On-Site service options.

Emergency supplies save your day.
Running short on supplies can also shut your system down.

Your AMERICARE Computer Repair Center stocks and sells supplies for many Xerox office products as well as needs for many other system brands, including Okidata, Epson, NEC and Kaypro.

Putting you back in business in no time.

And PC enhancements save your system.
Why not make your IBM or compatible PC smarter?

We stock and install enhancements that make your personal computer more powerful. . . *with more memory, more mass storage, and expansion boards.*

So with a more intelligent PC, you can process your work faster, using state-of-the-art programs.

And that could alleviate all kinds of information emergencies in the future.

For Intensive PC care, contact the nearest AMERICARE Computer Repair Center below. Xerox is ready. . . for any emergency.

COMPUTER SUPPLIES AVAILABLE

XEROX **COMPUTER REPAIR CENTER** TeamXerox

MasterCard VISA AMEX **Hours: Mon-Fri 8am to 5pm**

South Bay	East Bay	Sacramento	San Francisco
408-734-2540	**415-635-9300**	**916-920-2275**	**415-821-7719**

XEROX and Americare™ are trademarks of XEROX CORPORATION. IBM is a registered trademark of International Business Machines Corporation. AT&T is a registered trademark of American Telephone & Telegraph.

COMPUTER & SOFTWARE

SALES PERSON WANTED

IMMEDIATE OPENING for the right person. MS DOS experience required. Competitive salary. Great working environment.

Friendly Software Store

376 El Camino Real, San Carlos, CA 94070
(415) 593-8275

urity breach, first reported in *Government Computer News*, affects the $36 million Fleet Word Processing contract for 5000 workstations and secure LANs on the entire Navy fleet. The security was supposed to come from the LAN connection board in the workstations which require an authorized user identification and password to be used before the user could have access to files across the LAN. However, if the user attached to the LAN with a standard LAN board, they had free rein with the data on the LAN. The LAN is already in place on many ships, according to a Xerox representative.

After being alerted to the problem, the Navy has claimed that it is a minor "anomaly" and can be circumvented by encrypting the data used on the LAN. However, according to Xerox, no encryption mechanism is in place and the Navy has not requested one. The *Government Computer News* article quotes security experts as saying that such security breaches are not uncommon in government LANs. *Government Computer News*, 301/445-4405.

Fifth Generation Systems Will Distribute Software Supply Programs

One of the highly-regarded small Macintosh companies just got smaller. Software Supply, manufacturer of *Suitcase* and *Power Station*, reached an agreement with Fifth Generation Systems, manufacturer of *Fastback* for the IBM PC and Macintosh, which allows Fifth Generation to distribute all Software Supply products. According to Steve Brecher, president of Software Supply, he did this so he could spend more time developing software rather than marketing it. *Suitcase* and *PowerStation* have won numerous awards and have had healthy sales. Brecher says that he'd prefer to deal with "technical challenges rather than issues of sales, marketing, and finance." Fifth Generation Systems, 714/259-0541.

Software Publishers Association Awards Best In Software

The rapidly-growing Software Publishers Association (SPA) announced their Excellence in Software awards at their recent annual meeting. The awards were based on votes by the 320 SPA member companies. More than half of the awards went to Macintosh software, although there were no categories based on machine for the awards. The winners of the best in each category were:

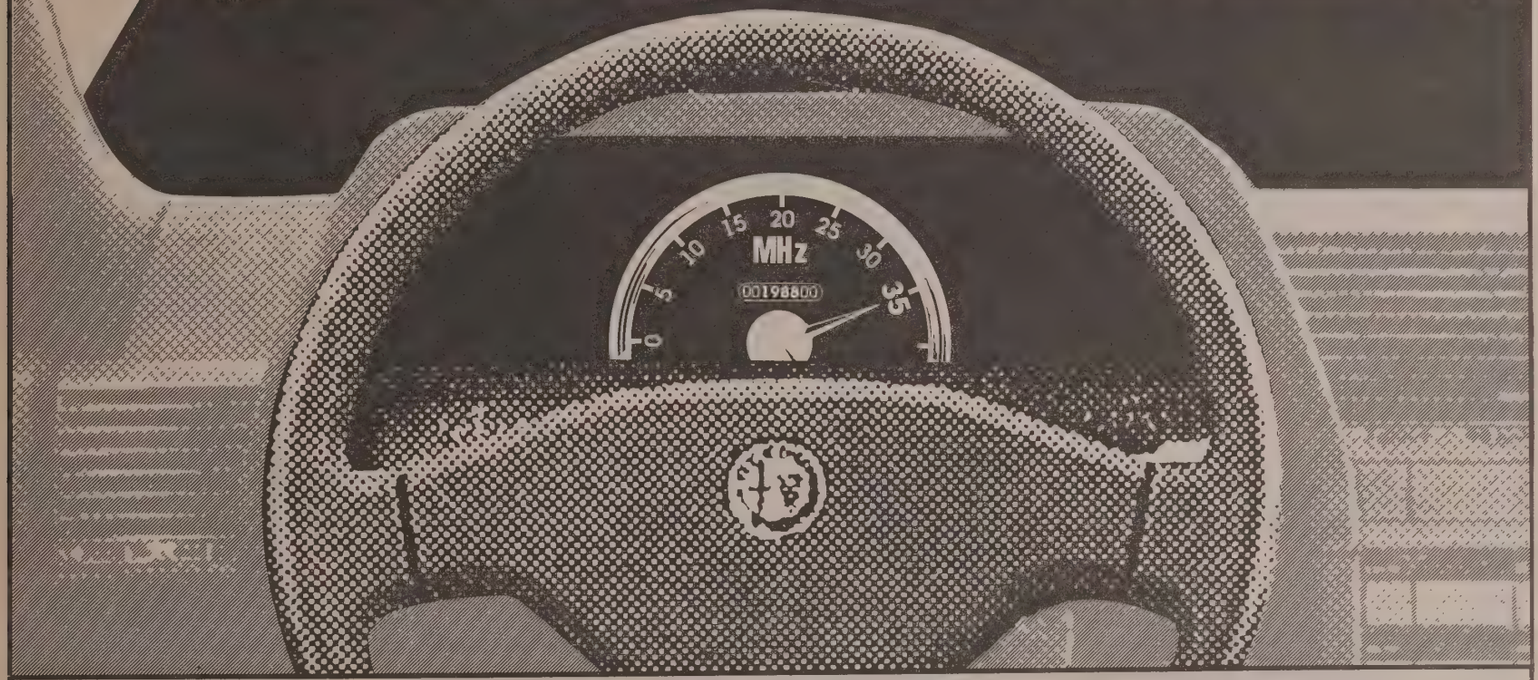
Business Awards

Vertical market application — *VideoWorks II* (MacroMind)
Utility — *Focal Point* (Activision)
Add-on — *Focal Point* (Activision)
Programming tool — *Dan Bricklin's Demo II Program* (Software Garden)
Business productivity — *Adobe Illustrator* (Adobe Systems)

Home/Entertainment Awards

Personal productivity — *MacInTax Federal 1986* (SoftView)
Creativity — *VideoWorks II* (MacroMind)
Simulation — *Falcon* (Spectrum HoloByte)
Action/Strategy — *Ancient Art Of War At Sea* (Brøderbund) and *Falcon* (Spectrum HoloByte)
Adventure or Fantasy/Role Playing — *Leisure Suit Larry In Ihe Land Of The Lounge Lizards* (Sierra On-Line)
Best Entertainment Program — *Jam Session* (Brøderbund).

NOW YOU GET THE SPEED (BUT NOT THE TICKET)

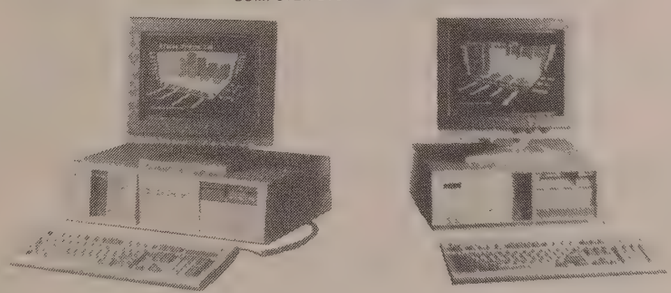


Everex System 386/20

- Fully compatible with IBM PC/AT
- Intel 80386 running at speeds of 20, 10, 6.7 MHz with 0 wait states. 16 & 8 MHz on the 386/16
- Machine use write-back cache memory (64K, 128K or 256K of 25 ns static RAM)
- Socket for an 80387 math coprocessor option running synchronously at 20, 10 or 6.7 MHz (16 and 8 MHz on the 386/16)
- 1 MB DRAM expandable to 8 MB on system board (120 ns DRAMs, 256KB or 1 MB)
- Alpha numeric real time diagnostic display (8-digit)
- One 32-bit memory expansion slot
- Specific Everex very high performance (1:1 interleave hard disk/floppy combination controller)
- Enhanced 101-key keyboard

(Landmark Benchmark = 35 MHz)

EVEREX
COMPUTER SYSTEMS DIVISION



Full Line of Everex Computers & Peripherals Available

CALL NOW!

Everex System 286/16

- Fully compatible with IBM PC/AT
- 80286 running at 16, 8, 05 5 MHz with 0 wait states on the 266/12
- Bus operates at 8 MHz
- 1 MB DRAM expandable to 4 MB on system board
- Front panel LED's for power-on, disk access and speed indication
- Alpha-numeric real-time status/diagnostic display (8-digit)
- 1.2 MB disk drive
- Special Everex high performance 1:1 interleave hard disk/floppy disk combination controller
- Speaker enable/disable switch

1 Year On-Site Warranty
For all Everex Systems

Available Only From Authorized Everex Computer Systems Division Dealers

All Everex Systems Designed & Manufactured In The USA

Everex is a registered trademark of Everex Systems Inc. IBM PC/AT is a registered trademark of IBM Corporation. Intel is a registered trademark of Intel Corporation.

International Micronet Systems

916 Clement Street
(between 10th & 11th)
San Francisco, CA 94118

(415) 752-8843

INTERNATIONAL MICRO NET

INTERNATIONAL MICRO NET

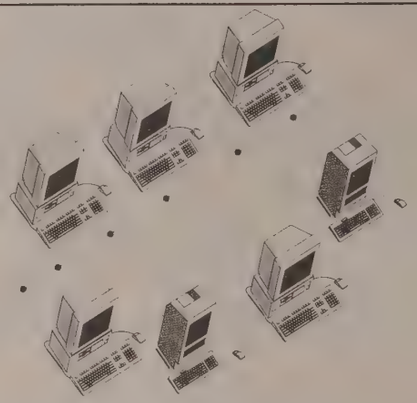
We

The Network

Featuring Novell

Advanced Netware 286 $1795

Entry Level Netware 286 $495



SFT/286 Version 2.1 $3,595

We have PC MAGAZINE Editors Choice SMC Arcnet & Western Digital EtherCard Plus

Low Cost Alternative Invisible Network $299
(Includes Cable & Software)

Novell's Ethernet PC Terminal $799
(Includes Ethernet Card)

SEMINARS

Aldus Pagemaker • Lotus • Word Perfect
dBase III • Xerox Ventura Publisher • Intro to Networks

- Beginning and advanced level courses offered. Call for reservations.
- On site training available.

We Specialize In:

- Custom Programming - PC's, Mini's, & Mainframes
- Database Design
- Multi-user Systems
- Inventory/Accounts Receivable Systems
- Gateways to Mainframes
- Documentation & Training
- Call for Brochures & Free Consultation

International Micronet Systems

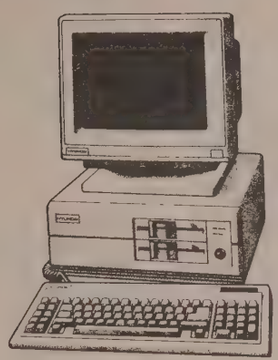
916 Clement Street (between 10th & 11th)
San Francisco, CA 94118

(415) 752-8843

Are Specialists and AST

INTERNATIONAL MICRO NET

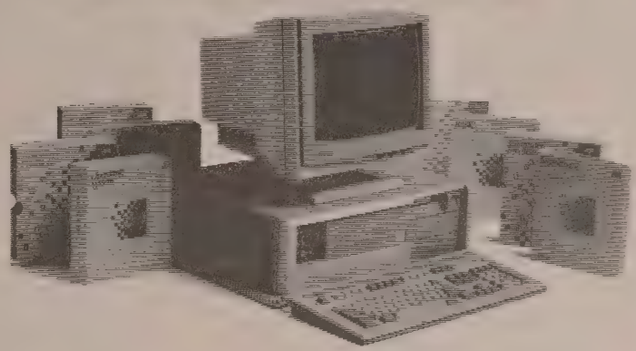
Hyundai Super 286c

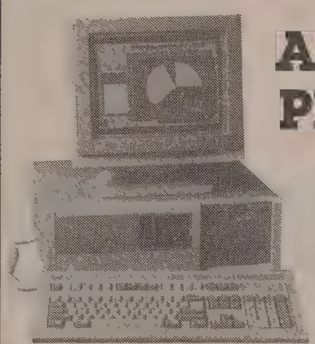


80286 Microprocessor
Switchable to 8/10 MHz
1 Wait State
1.2 MB 5¼" Floppy Disk Drive
640K KB RAM
6 Expansion Slots
(20MB, 30MB, & 40MB HD optional)
2 Serial/1 Parallel
101-Key Keyboard
18 Month Warranty

HYUNDAI

AST PREMIUM 286



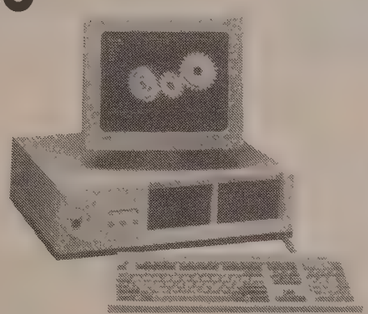


AST PREMIUM 386

Now Available—Call!

WYSEpc 386

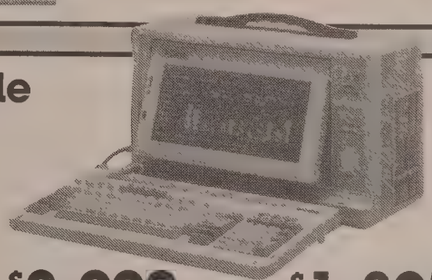
Model 3216



32-bit 80386
1 MB RAM
1.2 MB Internal 5¼"
Serial/Parallel Adapter
80387 or 80287 CPU
Enhanced AT-Style Keyboard

$2,999

LCD Portable Computers



Compaq Portable III Look-A-Like
1.2 MB Floppy
(1) 20 MB Hard Disk
LCD Backlit Screen

LCD 386 **$2,999** LCD 286 **$1,895**

COMPLETE 386 SYSTEM

1 MB, 20 MHz, Hi-Res Monitor, 1.2 MB Floppy, 200W PS, WD AT Controller, Keyboard, VGA/EGA/MGA/CGA Adapter

Only **$2,295**

COMPLETE AT TURBO SYSTEM

256K, 10MHz, 0 Wait State, AT Case, 200W PS, Hi-Res Monitor, 1.2 Floppy Drive, WD AT Controller, Hercules Compatible Card, Keyboard

Only **$999**

COMPLETE XT TURBO SYSTEM

256K, 4.77/10 MHz Clock Speed, Hi-Res Monitor, 150W PS, AT Style Case, Hercules Compatible Card, Multi I/O, Clock/Game/Serial, Keyboard

Only **$555**

Leasing Financing Available

VISA master charge

International Micronet Systems

916 Clement Street (between 10th & 11th)
San Francisco, CA 94118

(415) 752-8843

Wyse is a registered trademark of Wyse Corporation.
Compaq Portable III is a registered trademark of Compaq Computers. AST Research is a registered trademark of AST Research Inc.
Hyundai is a registered trademark of Hyundai Corporation.
Prices subject to change.

Education Awards

Pre-school or Primary School — *Designasaurus* (Britannica/DesignWare)
Middle or Secondary School — *Decisions, Decisions Series* (Tom Snyder Productions)
Higher Education — *Business Week's Business Advantage* (Reality Technologies)
Home Learning — *Mavis Beacon Teaches Typing* (Software Toolworks)
Best Educational Program — *Designasaurus* (Britannica/DesignWare)

General Awards

New Use of a Computer — *Jam Session* (Brøderbund)
Sound — *Jam Session* (Brøderbund)
User Interface — *Business Class* (Activision)
Graphics — *Adobe Illustrator* (Adobe Systems)
Network Software — *In Box/PC* (Symantec)
New Version — *Ready, Set, Go!* (version 4) (Letraset)
Technical Achievement — *Falcon* (Spectrum HoloByte)
Packaging — *Ancient Art Of War At Sea* (Brøderbund)
Best of the Best — *Adobe Illustrator* (Adobe Systems)

New Program Determines Contents Of Programs, BIOS

V Communications used the West Coast Computer Faire to announce a new program which lets you look at the code in programs and even the BIOS of your computer. *SOURCER* reads any program for MS-DOS and produces a commented assembly-language equivalent of the program. It can read .EXE and .COM files and create listings showing all the components in the programs. The program should be a boon to programmers who normally use debuggers to determine how a program runs, since *SOURCER* adds profuse comments to the listing it produces. The BIOS-preprocessor add-on program lets you look at the code in the BIOS of your computer. *SOURCER* costs $100, and the BIOS pre-processor is an additional $40. V Communications, 408/296-4224.

The Case of Apple Vs. Microsoft And Hewlett-Packard

The ethical and business questions behind Apple's suit against Microsoft have been hotly argued since the day that Apple announced the suit. What is Apple trying to do? How will this affect other software companies? Should Apple own the "rights" to the Macintosh interface? Did Microsoft copy the Macintosh interface in its *Windows 2.03* product? What about Apple's previous agreements with Microsoft?

Often ignored, however, is the fact that this is a legal case and it will eventually be settled or decided on legal issues. Certainly, there is a major public relations aspect to the case: Apple told the press about the suit before it told Microsoft. Apple sent copies of the suit to the press with the press release about the suit; Microsoft responded by doing the same thing in its response last month. Bill Gates has been widely quoted as being "confused" about the suit. However, since neither side has acknowledged that any out-of-court settlement is imminent, it is likely that the legal issues in the suit will soon become important.

Apple filed its complaint on March 17 in the U.S. District Court in the Northern District of California. The complaint was equally against Microsoft and Hewlett-Packard, although most of the publicity has focused on Apple and Microsoft; the complaint is titled "Complaint for Copyright Infringement and Unfair Competition." Hewlett-Packard used a Microsoft product (*Windows 2*) to create its New Wave operating environment. As of press time, Hewlett-Packard has not made a legal response to the suit. Microsoft responded three weeks later with "Defendant Microsoft's Answer, Affirmative Defenses, and Counterclaims." The text of both the complaint and Microsoft's answers is available on many computer networks such as CompuServe, the WELL, and BIX.

Apple claims that Microsoft has infringed against Apple's copyrighted audiovisual works as well as the programs which embody those works. Thus, the case is basically a copyright case. The copyright that Apple is claiming is for the "visual display and images generated by the Macintosh computer programs." Apple claims that it is the owner of the copyright and that the display and images "substantially consists of material wholly original with Apple." The audiovisual works in the case are the Lisa, Macintosh Finder, *LisaDraw, MacDraw, MacPaint, Lisa Project,* and *Mac Project.* Apple claims copyright to those audiovisual works as well as to the programs "that embody the audiovisual works." Apple claims that that Microsoft copied and adapted the audiovisual works and that Microsoft was unauthorized to do so.

Microsoft claims that such images are not copyrightable since they are common and that they did not originate with Apple. They accuse Apple of confusing the programs that create the displays with visual displays themselves. Further, Microsoft claims that it was authorized by Apple to copy the Macintosh display In their 1985 agreement (see last month's *MicroTimes*), Microsoft acknowledged that the visual displays in *Windows 1* were derived from the Macintosh; however, they did not say that Apple owned the copyright to Macintosh displays. Microsoft also claims that

MicroCom Systems
OUTSTANDING SOFTWARE
For IBM PC's and Compatibles

$3.50 PER DISK SMALL QUANTITIES
$3.00 PER DISK FOR TEN OR MORE
$1 OFF 5 DISKS OR MORE WITH THIS COUPON

☐ BUSINESS 1—EZ-Forms business form generation
☐ CAD 1—Altamira, 4 color object oriented drawing prog.*
☐ COMM 3—Compression and archival utilities.
☐ [5] COMM 4a,b,c,d,e—(5 disks) RBBS Bulletin Board System 14.1D
☐ [2] DATABASE 1a,b—(2 disks) The File Express menu driven general purpose database
☐ DATABASE 3—The pBASE relational database.
☐ EDUCATION 1—Interactive DOS tutorial for new PC users. Makes learning DOS painless
☐ [2] FINANCE 1a,b—(2 disks) PC Accountant 2.0 personal bookkeepping/finance management
☐ GAMES 1—3-D PacMan, Kong, SpaceWar, JanitJoe.*
☐ GAMES 2—Qubert, Pango, Centipede, Monopoly.*
☐ GAMES 3—Blackjack, Arm Chair QB, and Empire
☐ GAMES 4—Castle, StarTrek, and the original Adventure
☐ GAMES 5—The Hack adventure game from the universities. Like Rogue, only more complex
☐ GAMES 6—Pinball, Othello, Sopwith (fly one).*
☐ [2] INFO 1a,b—(2 disks) Cooking recipes database with keyword/ingredient retrieval prog. Add your own recipes
☐ LANGUAGE 5—Turbo Pascal interactive debugger, pop-up help, formatters, et cetera
☐ LANGUAGE 7—Complete Pascal interpreter, compiler, and debugger. Great for learning Pascal!
☐ LANGUAGE 8—Xlisp 1.7, the standard for AI langs
☐ MUSIC 1—Many clever tunes, and an excellent color graphics music editor
☐ [2] MUSIC 2a,b—(2 disks) PianoMan 3.0 polyphonic music recording and playback program.
☐ ORGANIZER 1—DeskMate, a Sidekick clone, and the Judy calendar program
☐ ORGANIZER 3—The PC-Outline Resident windowing outline editor/thought organizer
☐ PICTURES 2—High res. digitized pictures. Graphics req'd.
☐ PINUP 2—Provocative high res. pinups. Graphics req'd
☐ PRINTER 1—Font & sideways utils, spooler, banner mkr
☐ UTILITIES 1—A collection of invaluable DOS utilities
☐ UTILITIES 2—More invaluable DOS utilities. Too many to list here!
☐ UTILITIES 3—Complete set of debugging and diagnostic utilities

NEW RELEASES/UPDATES

☐ [2] CAD 2a,b—(2 disks) Advanced 2D/3D drafting program. 640k.*
☐ CAD 3—The PC-Flow, flowchart creation program.*
☐ [2] COMM 1a,b—(2 disks) Version 2.4 of the ever-popular Qmodem.
☐ [2] COMM 2a,b—(2 disks) Procomm 2.42, an excellent modem program with terminal emulation
☐ EDUCATION 2—Learn the Presidents, States (and capitals) and the periodic table.*
☐ EDUCATION 5—Learn Origami, the Japanese art of paper folding, with step by step animated instructions.*
☐ EDUCATION 7—Learn Basic with this interactive Basic tutorial.
☐ [2] FINANCES 3a,b—(2 disks) Express Calc 3.12, a powerful spreadsheet program
☐ GAMES 8—The Striker helicopter attack game, and Risk, the game of world domination.*
☐ GAMES 9—EGARisk, world domination in very high res. EGA required.
☐ GAMES 10—Solitaire, Golfing, and Sailing in the Bermuda triangle.*
☐ GAMES 12—Chess, Backgammon, and Wheel of Fortune. Graphics not required.
☐ GRAPHICS 1—Record and play back screen images! Excellent for demo creation, training, etc.*
☐ HUMOR 1—Practical, impractical & other jokes.
☐ [2] INFO 2a,b—(2 disks) Zip-Phone, national areacode/prefix to zip-code cross ref. A must for businesses.
☐ LANGUAGE 1—PDProlog 1.91a, an advanced language for artificial intelligence applications.
☐ [2] LANGUAGE 3a,b—(2 disks) The A86 2.18 macro assembler and debugger. A complete assembly development system.
☐ LANGUAGE 10—Augusta, a subset of the Department of Defenses' new programming language ADA.
☐ [2] LANGUAGE 11a,b—(2 disks) Forth-83 2.1 4th generation programming language
☐ SHELL 4—Automenu customizable menu facility, and the HDM II 4.04 hard disk menuing system.
☐ UTILITIES 5—Utilities for formatting, parking, and optimizing hard disk drives.
☐ UTILITIES 6—Advanced utilitiess including Dpath, Esc, Hotdos, Pushdir and Popdir. Resident program utilities and more.
☐ UTILITIES 7—More Advanced utilities including MasterKey (undeletes files from hard disks), Killdir.
☐ [2] WORD 1a,b—(2 disks) PC Write 2.71, a powerful word processing system, with built in spell checker.

MT-6/88

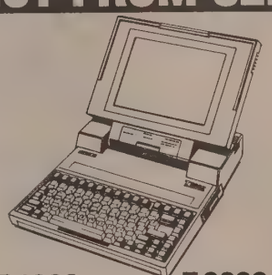
*Disks so marked require color graphics.

Cost of Disks _____
CA Res Sales Tax _____
Ship/Handling $1.00
Total Enclosed _____

MicroCom Systems
3673 Enochs Street, Santa Clara, CA 95051
(408) 737-9000
M-F 7 am-9 pm, Sat-Sun 8 am-5 pm

TOSHIBA FACTORY PRICES DIRECT FROM SEFCO

LAPTOPS



T-1000
Just 6.4 lbs
512K to 640K
720KB 3½" drive
Sale $739

Toshiba Modems
Sale $265

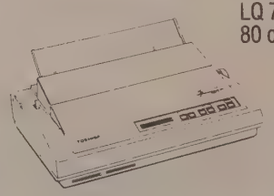
T-1100
Dual 720K floppies
640K memory
Sale $1539

T-1200
Fully portable
1 MB memory
20 MB hard disk
Sale $2450

T-3200
80286 cpu
40MB hard disk
720K floppy
$Call

T-5100
80386 cpu
40MB hard disk
1.44 floppy
$Call

PRINTERS



321 SL
Draft 216 cps
LQ 72 cps
80 column
Sale $469

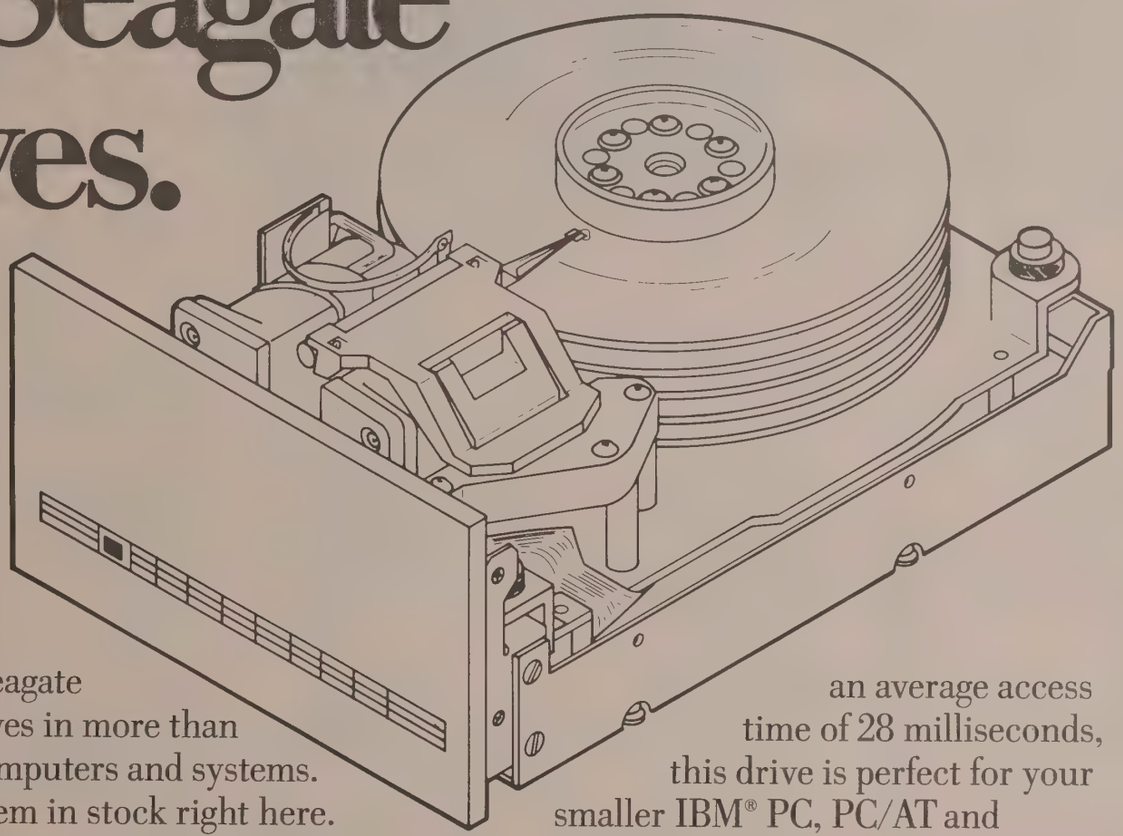
341 SL
Draft 216 cps
LQ 72 cps
132 column
Sale $649

351 SX
Draft 360 cps
Lq 120 cps
132 column
Sale $999

PS 351C Color Printer
24 pin
132 column
300/100 cps
P/S w/tractor feed
$1049 Sale

SEFCO
2682 Middlefield Road Unit C
Redwood City, CA 94063
(415) 365-7700
So CA (818) 765-8882

Mini Micro Supply, the first place to look for Seagate drives.



You will find Seagate 5¼" hard disc drives in more than 6 million small computers and systems. You'll also find them in stock right here.

We sell Seagate drives because they're built with the consistent quality that ensures exceptional performance in every drive you install.

Featured here is Seagate's full-height ST4096 hard disc drive. With a formatted capacity of 80 megabytes per drive, and an average access time of 28 milliseconds, this drive is perfect for your smaller IBM® PC, PC/AT and compatible systems.

So when you're looking for drives for new computers, disc storage upgrades or add-ons, contact Mini Micro Supply Co. Inc., 2050 Ringwood Ave., San Jose, CA 95131 (408) 434-6859. We're the first place to look for the first name in disc drives.

Seagate

IBM is a registered trademark of International Business Machines.

Mini Micro Supply
The Reseller's Resource.

Your Best Source For Quality Products

PC/XT COMPATIBLE SYSTEM

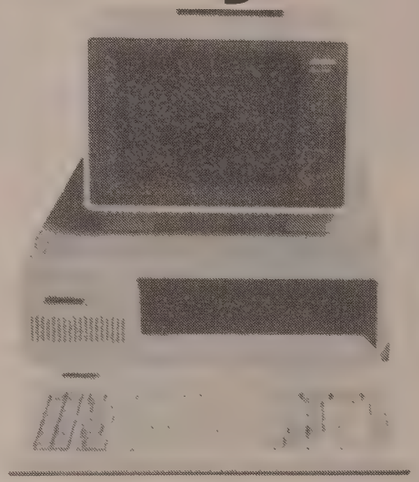
- Turbo XT motherboard
- XT case & 150w power supply
- Floppy disk drive
- Monographics w/printer port
- Floppy controller
- AT look alike keyboard
- Hi-res monitor

$495

386 COMPATIBLE SYSTEM

- 1 MB 32 bit RAM
- 1.2 MB floppy drive
- Floppy/hard disk controller
- 200W power supply
- 7 expansion slots
- 20 MB optional

$2195



AT-286 COMPATIBLE SYSTEM

- 6/10 AT motherboard
- 0 wait state
- 200w power supply
- Western digital floppy & hard controller
- 5339 AT enhance keyboard (101 keys)
- Monographics w/printer card
- 1.2 Drive
- Hi-res monitor

$950

MONTHLY SPECIAL Seagate ST 251 40 MB **Sale $360**

FREE
Printer Cable & Stand w/Any Printer Purchase

PRINTERS

Epson	
EX 800/1000	$429/525
FX 86E/286E	329/469
LX 800	199
LQ 800	389
LQ 850	520
LQ 1050	695
Citizen	
MSP 10	$275
MSP 40	309
MSP 45	429
MSP 50	385
MSP 55	499
120D	159
180D	175
Star	
NX 1000	$199
Okidata	
192+/193+	$349/469
Toshiba	
321/341	$520/660
Fortis	
2010/2015	$299/395
NEC	
2200	$550
P6/P7	Call

Dealers Welcome, Call For Quantity Discounts

Printer Ribbons Available At Low Prices! Call!

ADD-ON CARDS

384 multifunction card	$78
Multi I/O card	52
Monochrome graphics w/p	42
Color graphics card	45
Memory expansion card	42
Parallel printer card	20
RS-232 serial card	24
Game I/O card	15
Floppy controller w/cable	20
XT hard disk controller	60
Everex 1200 baud modem	85
Everex 2400 baud modem	170
Logimouse C-7	75

HARDWARE

XT keyboard	$50
AT/XT enhanced keyboard	65
150W power supply	50
200W power supply	70
Printer cable	8
360K Floppy Disk Drives	
Teac	80
Fujitsu	70
Seagate ST 225	210
Seagate ST 238	230
Seagate ST 251 - 40 MB	360

Toshiba Laptops

T-1000	$739
T-1100	1539
T-1200	2450
T-3200	CALL
T-5100	CALL

SOFTWARE

DATABASE MANAGEMENT

#5, #730 PC FILE+: A powerful database management program that is easy to use. Great for creating labels. Works well with PC TYPE+ to generate forms and letters. $12

#267, #288 FILE EXPRESS: An information management program. Small and medium sized databases are easily manipulated by using menu driven commands. $12

#522 INSTANT RECALL: Memory resident program that stores and retrieves a wealth of information. $6

#635, #636 MUSES: Specialized database, organizes manuscripts by publisher, tracking responses and correspondence as well as follow up reminders. $12

COMMUNICATIONS

#310 QMODEM: Fast and easy to use. Has a windowing feature. $6

#499 PROCOMM: A professional communications program. $6

GRAPHICS

(Programs listed require a color graphics card.)

#652 HI RES RAINBOW: This program is easy to use and works with either a CGA or EGA card. Can be used with either a mouse, joystick, or the keyboard to create artwork. $6

#701, #702, #703, #704 DANCAD3D: A 3D Cad system that features rotation and built in animation. An advanced CAD program for engineering applications. $24

PROGRAMMING TOOLS

#666 SPL: A structured programming language. A hybrid mix of structured BASIC with Pascal. $6

GAMES

#390 FLIGHTMARE: An excellent graphics game. Highly recommended to test your skills. $6

#457 GREATEST ARCADE GAMES: This includes Striker and Space Wars, and many more . . . A must for your game library. $6

#678 GOLDEN WOMBAT OF DESTINY: A text adventure from England. You too can discover the forbidden city of the Great Lost Empire and unearth the mysteries it contains. (Requires a color graphics adaptor) $6

#723 SUPER PINBALL #1: One of a collection of 5 great pinball games. Menu driven. Works with a CGA card and 128K of memory. $6

SALES MANAGEMENT

#687, #688, #689 PROSPECT: A useful sales management program that allows you to schedule appointments. Searches and retrieves names, activities, or messages with ease and speed. $18

WORD PROCESSING

#78, #627 PC-WRITE: A powerful and popular word processing program, works well with a mouse. Spelling checker is an additional feature. $12

#528 New York Word: This program offers mail merge, text buffering, split screens, and a host of special features. $6

#455, #681, #682 PC TYPE+: This processor is from Jim Button's library. Easy to use and combines easily with PC-FILE+ for mail merge. $18

#480 PC Outline: Comparable to ThinkTank. Outline helps you to arrange and re-arrange items by using different categories of classification. $6

SPREADSHEETS

#199 PC CALC: This program is easier to use than Lotus, very powerful and effective. $6

#696 QUBECALC: This spreadsheet is three dimensional, with an X, Y, and Z axis. Commands are similar to Lotus. $6

UTILITIES

#133 ULTRA UTILITIES: Lost files may be recovered using this program. Features include file review and modification. $6

#405 DESKTEAM: Memory resident utility program that has a phone dialer, printer controller, notepad, calculator, calendar, and an alarm clock. $6

#478 HARD DISK UTILITIES: A selection of the best utility programs that have been selected from over 25 disks in the library and compiled onto one disk for your ease of use. $6

#517 IMAGEPRINT: This program allows your dot matrix printer to generate documents that are in Near Letter Quality format. $6

#523 SIDEWRITER: Text files may be printed sideways with this useful program. $6

#558 PC PROMPT: Memory resident program that has HELP commands on an online mode. Provides syntax of most DOS commands. $6

#608 AUTOMENU: Programs are easily accessible with this program. Batch files and DOS commands are easily executed by "point and pick". $6

#728, #729 HOMEBASE: The next generation in a desktop organizer. Features a calculator. $12

#610 PACKDISK: Optimize and speed up your disk access time. $6

#611 BLACKBEARD: The programmer's editor for writing code in PASCAL, C, or FORTRAN. $6

#579, #580 PASCAL TUTOR: Learn to program in PASCAL in the convenience of your own home. $12

#598 DISKTOOL: Like Norton's. Recover erased files or fix damaged files. $6

FINANCIAL MANAGERS

#393 CHECKBOOK MANAGEMENT: Balancing your checkbook is made easy with this program. Features entry, deletion, bank statement reconciliations, automatic check number, etc. $6

LANGUAGES/EDUCATIONAL TOOLS

#95 MATH TUTOR: Teaches grades 1-6 the basic math skills. $6

#612 FOREIGN LANGUAGES: A self-learning educational tool, provides instruction in Hebrew, German, Spanish, French, and Italian. Multiple choice format keeps track of errors for retesting purposes. Beginning and intermediate levels. $6

#705 KID GAMES: Teaches children the alphabet, word conjunction, as well as shape identification. Good graphic program for grades kindergarten through the 4th grade. $6

#712 JAPANESE: Tutorial that provides basic instruction in Japanese, several levels of difficulty. $6

PC-SIG LIBRARY 4th Edition $12.95

PC-SIG

PC Sig Authorized Dealer

UNIVERSAL COMPUTER PRODUCTS

951 El Camino Real, South San Francisco, CA 94080

Mon.-Fri.: 9am-7pm Sat: 10am-5pm

(415) 583-9736

Prices subject to change without notice

master charge

VISA

Apple has lost no money due to the existence of *Windows 2* and denies Apple's accusation of unfair competition. Visually, *Windows 2* is almost indistinguishable from *Windows 1*. The only major visual difference is that the windows in version 2 can be overlapped while in version 1 they could only be side-by-side.

In its counterclaim, Microsoft accuses Apple of breach of the 1985 contract, of hurting it by publicly repudiating the contract, and of hurting it by going public with the lawsuit before telling Microsoft.

The case law that some visual displays generated by a computer program is very clear. In the early 1980's, the decision in the *Atari, Inc. v. North American Phillips Consumer Electronics Corp* case (better known as the "PAC-MAN" case) set down the rule that a program which has a similar but not identical visual display could be considered a copy of an earlier program. However, in order to prove that one program infringes on another, the similarity must be in areas that are also protectable. Since displays are copyrightable but ideas are not, the similarity must be in an area that is inherently a visual part of the program, not an "action" part. The *Brøderbund, Inc. v. Unison World* case followed that logic by stating that as long as there is a wide range of possibilities of expression, any expression that was substantially the same as an earlier expression could be considered a copy.

Interestingly, Microsoft denies that the major reason for the Macintosh's popularity is its user interface. In what may be an act of puffery, it also claims that *Windows* is "the preferred graphic user interface on the IBM PC" and compatibles.

The crux of the arguments in the case revolve around items 9 through 15 in Apple's suit. Each of these items from the complaint and the answer is shown here.

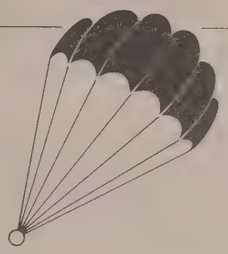
Apple:
9. The Macintosh computer programs generate a series of fanciful visual displays and images appearing on the computer screen, whereby the user, by using a cursor control device (i.e., "mouse"), can communicate with the computer. Apple has expended millions of dollars and years of creative effort in the development of artistic, aesthetically pleasing visual displays and graphic images that enhance the value and commercial appeal of Apple's products. The development started with Apple's work on the Lisa computer and continued through the extensive development efforts on the Macintosh. As a result of this major investment, the distinctive expression represented by the visual displays and graphic images generated by the Macintosh computer programs is widely recognized as a hallmark of the Macintosh computer system.

Microsoft:
9. Admit that Macintosh computer programs listed in (h)-(m) of Paragraph 10 of the complaint (hereinafter referred to as the "Macintosh computer programs") generate visual displays, including graphic images, on the microcomputer screen. Deny that such displays are fanciful or distinctive or a "hallmark of the Macintosh computer system." Admit that Macintosh users may communicate with the computer by use of a "mouse." Admit that Apple has expended resources on the Macintosh computer programs. Deny for lack of knowledge or information all other averments in Paragraph 9 of plaintiff's complaint.

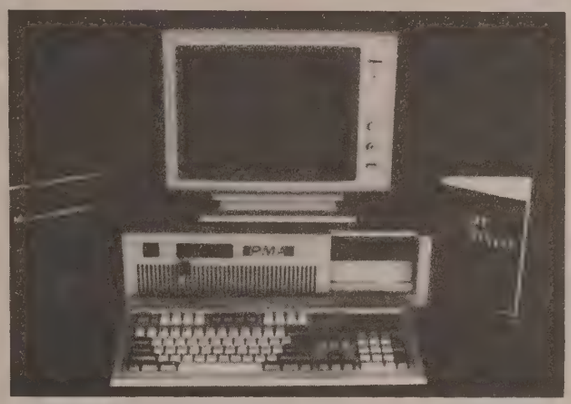
Apple:
10. The visual displays and images generated by the Macintosh computer programs are protected audiovisual works under the Copyright Act. Apple is the owner of the following copyrighted audio-

Find out what thousands of satisfied customers like doctors, lawyers, designers, accountants, school districts, and government agencies already know.

PMA Provides the Best Value in Personal Computing Systems



PMA's AT PC 386/20 **$3469**



Standard features:
Intel 80386 running at 20 MHz
1.2 MB floppy drive
Floppy and hard drive controller
1 MB RAM expandable to 16 MB 32-bit
Enhanced 101 keyboard
2 serial ports and 2 parallel ports
200 watt power supply
Real time clock and calendar
8 expansion slots (1-32 bit, 6-16 bit, 1-8 bit)
EGA color system
with EGA monitor and EGA display adapter, and a 40 meg 25 ms access hard drive

This system is highly effective in research and development applications. CAD/CAM data base management and desktop publishing. PMA's 386/20 is compatible with industry standard software and will run MS OS/2 when it becomes available.

PMA's AT PC-286/10 **$1349**

This 286/10 system is one of the highest performance personal computers available. It's high speed operation is ideal for software development, local area networks, CAD/CAM and desktop publishing applications as well as business office operations. The PMA 286/10 is compatible with industry standard software and will run MS OS/2 when it becomes available.

Standard features and options
Intel 80286 running at 10 MHz
0/1 wait state
1 MB of RAM, expandable to 16 MB
1.2 MB floppy drive
Floppy and hard drive controller
Enhanced 101 key keyboard
1 serial and 1 parallel port
200 watt power supply
Real time clock and calendar
8 expansion slots (6-16 bit, 2-8 bit)
Monochrome graphics system
with high resolution monochrome monitor
Monochrome graphics display adapter
(720 x 348) with a 20 MB 65 ms hard drive

PARACHUTE MICROSYSTEMS AMERICA
897 Independence Avenue 5-E
Mountain View, CA 94043
Inside California (415) 968-5755
Outside California (800) 822-9922

We supply systems to NASA, Lawrence Livermore Labs, University of California, and more...

"We make the Best Computers Better"

BEST WHOLESALE PRICES

NOW IN STOCK

COMPAQ 386/20 MEMORY
• 1 MB Module
• 4 MB Module

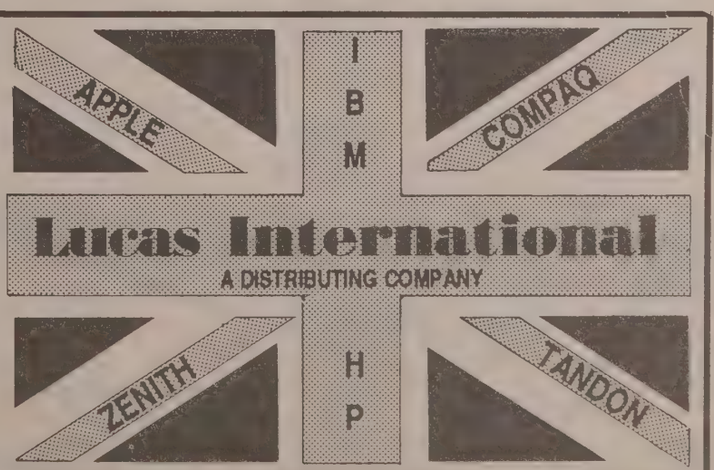
HP DESKJETS/LASERJETS

IBM PS/2 SYSTEMS
• Model 30-021
• Model 80-311

APPLE
• Laserwriter II NT w/ Toner

FAX (415) 341-5723

(415) 341-6351



visual works, each of which substantially consists of material wholly original with Apple and is copyrightable subject matter under the Copyright Act:

(a) Lisa, Reg. No. PA 336 104, effective May 1, 1987 (Exhibit A).

(b) Macintosh Finder, Reg. No. PA 336 105, effective May 1, 1987, a derivative work based on Lisa (Exhibit B).

(c) LisaDraw, Reg. No. PA 336 103, effective May 1, 1987 (Exhibit C).

(d) MacDraw, Reg. No. PA 336 102, effective May 1, 1987, a derivative work based on LisaDraw (Exhibit D).

(e) MacPaint, Reg. No. PA 336 107, effective May 1, 1987 (Exhibit E).

(f) Lisa Project, Reg. No. PA 336 106, effective May 1, 1987 (Exhibit F).

(g) Mac Project, Reg. No. PA 336 101, effective May 1, 1987 (Exhibit G).

Further, the computer programs that embody the audiovisual works are protected literary works under the Copyright Act. Apple is the owner of the following computer programs, each of which substantially consists of material wholly original with Apple and is copyrightable subject matter under the Copyright Act:

(h) Macintosh Finder 1.0, Reg. No. TX 2 130 713, effective August 25, 1987 (Exhibit H).

(i) MacDraw 1.7, Reg. No. TX 2 130 712, effective August 25, 1987 (Exhibit I).

(j) MacPaint 1.0, Reg. No. TX 2 130 711, effective August 25, 1987 (Exhibit J).

(k) MacProject 1.0, Reg. No. TX 2 130 714, effective August 25, 1987 (Exhibit K).

(l) Macintosh ROM, Reg. No. TX 2 130 714, effective September 12, 1985 and supplemental registration, Reg. No. TX 2 043 375, effective April 14, 1987 (Exhibit L).

(m) Macintosh Plus ROM, Reg. No. TX 1 862 601, effective August 5, 1986 (Exhibit M).

Collectively the above works are referred to herein as the "works in suit" or the "Macintosh audiovisual works."

Microsoft:
10. Admit that Apple received Certificates of Registration for the referenced works in suit. Deny that the visual displays, including graphic images, generated by the Macintosh computer programs substantially consist of material wholly original to Apple or are copyrightable subject matter under the Copyright Act. Plaintiff's attempt to define all works referred to in Paragraph 10 of its complaint as "Macintosh audiovisual works" is an attempt by Apple to cause confusion in this litigation and in the microcomputer software industry in general. Six of the referenced works are microcomputer programs, not audiovisual works, and three of the referenced works are for the Lisa computer system, not the Macintosh. Defendant hereby objects to any attempt to define the sum of the works in Paragraph 10 of plaintiff's complaint.

Apple:
11. At all times, Apple has been and is the sole owner of all rights, title and interest in the works in suit. For each work Apple has complied in all respects with the Copyright Act and all other laws of the United States governing copyrights, and has received Certificates of Registration from the Registrar of Copyrights.

Microsoft:
11. Admit that Apple has received the referenced Certificates of Registration from the Register of Copyrights. Deny all other averments in Paragraph 11 of plaintiff's complaint.

Apple:
12. Hewlett-Packard sought a license from Apple for the Macintosh audiovisual works which, on information and belief, Hewlett-Packard intended to use in connection with computer programs that would generate visual displays and images. Apple declined to grant a license to its Macintosh audio visual works. Plaintiff is informed and believes, and on that basis alleges, that nonetheless Hewlett-Packard has developed a computer program called "New Wave" which embodies and generates a copy of the Macintosh audiovisual works. New Wave must be used in conjunction with a computer program sold and distributed by Microsoft known as "Windows 2.03." On information and belief, Hewlett-Packard is licensed by Microsoft for the use of Windows 2.03 in connection with New Wave. As used herein, the term "New Wave" includes any and all visual displays and images generated by Windows 2.03 when operating in conjunction with New Wave. The term "Windows 2.03" is used herein to include all versions or revisions of that product.

Microsoft:
12. Admit that Hewlett-Packard has developed a computer program called "New Wave." Admit that New Wave may be used in conjunction with a microcomputer program distributed by Microsoft known as "Windows." Admit that Hewlett-Packard has licensed Windows 2.03 from Micro-

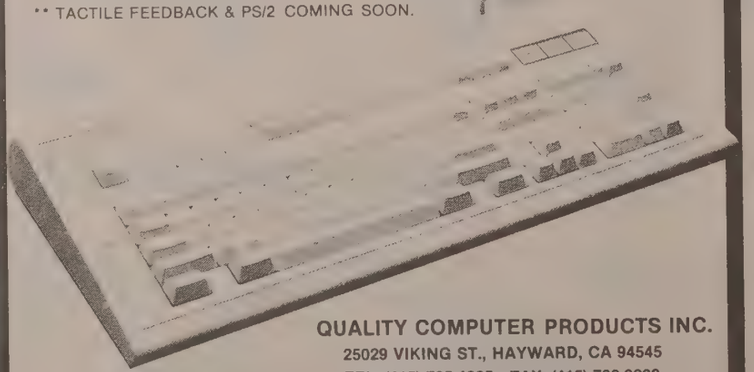
CKB

KEYBOARDS

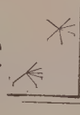
Outstanding Quality at Unbeatable Prices

FACTORY DIRECT

- HIGH RELIABILITY CAPACITIVE KEYSWITCHES WITH JAPANESE KEYPADS.
- DOUBLE INJECTION MOLDED STANDARD KEYS.
- NEW PERMA-COAT PROTECTIVE LAYER GIVES A LIFETIME IN EXCESS OF 50 MILLION KEYSTROKES.
- FOURTEEN DIFFERENT LANGUAGE VERSIONS AVAILABLE.
- TACTILE FEEDBACK & PS/2 COMING SOON.



QUALITY COMPUTER PRODUCTS INC.
25029 VIKING ST., HAYWARD, CA 94545
TEL: (415) 785-4225 FAX: (415) 786-0209

Plug this , into this ,
and fax these  ,
anywhere .

Introducing the Panasonic Fax Partner.™
Faster than overnight mail. Lots cheaper.
And you don't even have to leave your desk.

The Fax Partner from Panasonic. It's a new dimension in PC productivity. It puts your PC in touch with every Group III facsimile machine or fax-board-equipped PC in the world. The Fax Partner has its own CPU, so you can keep working while sending and receiving text and graphics. You can edit, print and store text and graphics, too. The IBM* PC-compatible Fax Partner makes it easy, with menu-driven software. And features like auto dial, auto record keeping, plus a directory to store hundreds of phone numbers.

Panasonic Office Automation OA

*IBM is a registered trademark of International Business Machines Corporation.

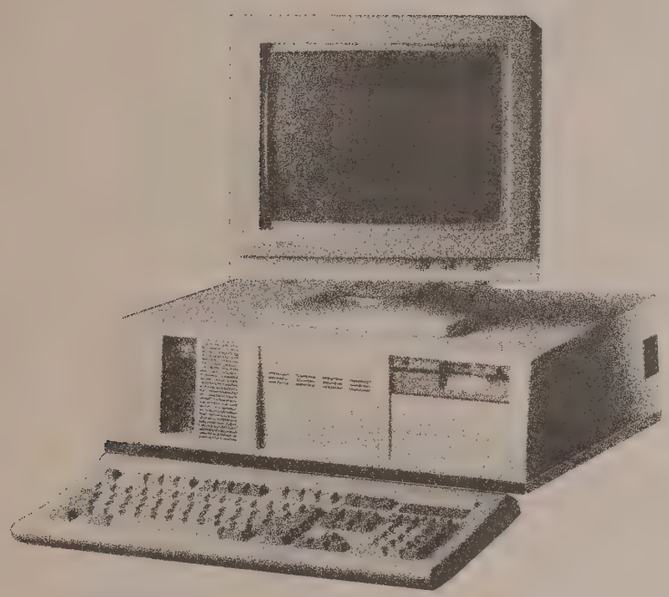
Computertime

SAN FRANCISCO
3 Embarcadero Ctr
Corner of Clay & Davis
397-6776

SAN RAFAEL
1115 Third St
Between A and B Streets
459-8080

GO FOR IT!

THE EVEREX SYSTEM 386/20



KEY FEATURES OF ADVANCED MANAGEMENT MEMORY ARCHITECTURE™

Advanced mainframe technology ported to an AT/compatible environment

93-99% hit rate expectancy

Sophisticated look-ahead/read-behind caching

Variable size (memory-associated) cache

Write-back caching (read and write caching)

Large block fetch (wide data path)

32-bit wide memory-bus up to 16MB

Direct mapped/one way associated cache organization

Application transparent

APPLICATIONS

Workstation

Extremely Fast File-Server

High Performance

Multi-User System

CAD/CAM

COMPETITIVE BENCHMARK TESTING RESULTS

Based on in-house testing, Everex Computer Systems Division has compiled the following benchmark test results.

Computer System	MIPS	Landmark	Norton SI Advanced
Everex Step 386/20	**4.91**	**35.0**	**24.3**
Compaq Deskpro 386/20	4.59	34.5	24.2
Everex Step 386/16	**3.93**	**27.3**	**19.5**
Everex Step 286/16	**3.27**	**21.4**	**18.4**
AST Premium 386/20	3.04	20.0	21.0
Wyse 386/16	2.98	20.6	17.6
Acer 386/16	2.99	20.6	16.2
Compaq Deskpro 386/16	2.90	20.0	17.6
IBM PS/2 Model 80, 16MHz	2.87	20.0	17.6
Everex Step 286/12	**2.45**	**15.9**	**13.7**
AST Premium 286/10	2.02	13.0	11.1
Compaq Deskpro 286/12	1.89	11.7	11.5
IBM PS/2 Models 50, 60	1.58	9.8	9.8
IBM PC/AT 8MHz	0.93	8.0	7.7

COMPATIBILITY TESTING RESULTS

The Everex System 386 has been evaluated by XXCAL, an independent third-party testing house. The test objective, as stated in XXCAL's report of February 16, 1988, was "to reveal any problems or inconsistencies relative to a selected group of off-the-shelf commercial software, networks, and peripheral products" on the Everex System 386. XXCAL's technicians "installed each application per documentation, [then] tested all functions, commands, and options directly related to a successful and thorough test of the product."

Features

- **Fully compatible with the IBM® PC/AT™**
- **Intel® 80386 microprocessor, running at speeds of 20, 10, 6.7 MHz with zero wait states. (16 and 8 MHz on the 386/16)**
- **Speed-selectable by keyboard, software or front-panel switch**
- **The bus operates at 10 or 6.7 MHz**
- **The machine uses write-back cache memory (64K, 128K or 256K of 25 ns static RAM)**
- **Socket for an 80387 math coprocessor option, running synchronously at 20, 10 or 6.7 MHz. (16 and 8 MHz on the 386/16)**
- **1 Megabyte DRAM expandable to 8 Megabytes on the system board (120 ns DRAMs, 256 Kb or 1 Mb)**
- **Front panel LEDs for power-on, disk access and speed indication**
- **Alpha-numeric realtime diagnostic display (8-digit)**
- **1.2 MB floppy diskette drive**
- **Six 16-bit and two 8-bit bus expansion slots**
- **One 32-bit memory expansion slot**
- **Special Everex very high performance (1:1 interleave) hard disk/floppy combination controller**
- **Front access to up 6 to 5 half-height mass storage devices**
- **Enhanced 101-key keyboard**
- **System clock/calendar/configuration data in CMOS RAM with battery backup**
- **Everex enhanced BIOS**
- **Easy-to-use SETUP utility in ROM, supports over 45 drive types**
- **BIOS supports 3.5_0 7270K diskette drives**
- **Front panel keylock to disable keyboard**
- **Front access reset switch**
- **Speaker enable/disable switch**
- **Complete, easy to follow user manual**
- **UL listed power supply; switchable 120240 VAC**
- **13 months on-site warranty**
- **1 serial and 1 parallel port**

Call Us For Full Line of EVEREX Peripheral Products & Computers.

We Also Carry Hard/Floppy Drives, Monitors, Printers and Motherboards All Major Software.

3F 3F Associates
44100 Old Warm Springs
Fremont, CA 94538

(415) 659-0403

FAX (415) 651-9190

soft. Plaintiff's attempt to define the product name "New Wave" to include any and all visual displays, including graphic images, generated by Windows 2.03 is an attempt to cause confusion about the responsibilities of the various parties. These programs are produced and marketed by separate and distinct companies. Plaintiff should not be permitted to distort the meanings of the product names or to assume by definition that which it cannot prove. Defendant hereby objects to any attempt to include any visual displays, including graphic images, generated by Windows 2.03 in the definition of New Wave. Microsoft denies that Windows 2.03 infringes any alleged copyright held by Apple. Microsoft denies for lack of knowledge or information all other averments in Paragraph 12 of plaintiff's complaint.

Apple:
13. The visual displays and images generated by New Wave are illegal and infringing copies of the Macintosh audiovisual works and are unauthorized derivative works. Attached hereto are photographs comparing various visual displays and images generated by the Macintosh computer programs (Exhibit N1, N3, N5, N7, and N9) and screen displays generated by New Wave (Exhibit N2, N4, N6, N8, and N10). The similarity between New Wave and the Macintosh visual displays and images is so great that even the Hewlett-Packard product manager for New Wave in touting the product has conceded publicly that New Wave is "similar to the Macintosh." On information and belief, Hewlett-Packard had access to the Macintosh audiovisual works. Hewlett-Packard's copying and adaptation of the Macintosh audiovisual works in New Wave infringe Apple's exclusive rights under the Copyright Act.

Microsoft:
13. Deny that Windows 2.03 infringes any alleged copyright or other legal right held by Apple. Deny for lack of knowledge or information all other averments in Paragraph 13 of plaintiff's complaint.

Apple:
14. The visual displays and images generated by Windows 2.03 are themselves illegal and infringing copies of the Macintosh audiovisual works and are unauthorized derivative works. Throughout its development of Windows 2.03, Microsoft had access to the Macintosh audiovisual works. Microsoft's distribution and sale of Windows 2.03 and its copying and adaptation of the Macintosh audiovisual works exceed limited license rights granted to Microsoft by Apple and infringe Apple's exclusive rights under the Copyright Act.

Microsoft:
14. Admit that during the development of Windows 2.03 Microsoft had access to the visual displays, including graphic images, generated by the Macintosh computer programs. Deny all other averments in Paragraph 14 of plaintiff's complaint.

Apple:
15. Defendants' copying and adaptation of the Macintosh audiovisual works in New Wave and Windows 2.03 are unauthorized by Apple and constitute willful infringement of the exclusive rights reserved to Apple under the Copyright Act. By reason of defendants' acts of infringement, Apple has suffered and will continue to suffer, unless defendants' infringement is enjoined, irreparable injury that cannot be adequately be remedied at law. Because of such willful infringement, Apple is entitled to an award of its attorneys fees pursuant to 17 U.S.C. $505.

Microsoft:
15. Deny. □

Your #1 Source For Discounts!

Mon.-Fri. 8:30-6:00 Sat. 9:30-5:00

Lotus 123 $297 | dBase III + $369 | WORDPERFECT $189 | Desqview Qemm 386 $38

SOFTWARE

- adaptive (usa), inc.
TRACKER .53
- adobe systems
ADOBE ILLUSTRATOR-MAC .292
ADOBE TYPE LIBRARY .CALL
- aldus corp.
ALDUS FREEHAND .CALL
PAGEMAKER / IBM .459
- american small business
PRODESIGN II .139
DESIGN CADD 3/D .139
- ansa software
PARADOX V.2.0 .373
PARADOX 2.0 6 USERS .579
PARADOX 386 .595
- ashton-tate
dBASE III + .369
dBASE III + LAN PACK .579
dBASE MAC .292
FRAMEWORK II .369
BYLINE .179
RAPIDFILE .237
DRAW APPLAUSE .269
MASTER PRESENTATION GRAPHICS .329
MULTIMATE ADVANTAGE II .259
- autodesk
AUTOSKETCH REG .49
AUTOSKETCH ENH. W/8087 SUPPORT .59
- avery international
AVERY LIST & MAIL .33
- banner blue
ORG PLUS .62
- barrons educational
BARRONS SAT .36
- bartel systems
LE MENU .42
- bitstream
INSTALLATION KITS:
#1. MS WINDOWS KIT .67
#2. VENTURA PUBLISHER KIT .67
ALL FONTWARE TYPEFACES .147
PROFESSIONAL TYPEFACES .277
- block development
FORM TOOLS .57
- boeing computer services
BOEING GRAPH .189
BOEING CALC .224
- borland int'l.software
QUATTRO .107
SPRINT .112
REFLEX .87
REFLEX WORKSHOP .45
REFLEX (MAC) .167
SIDEKICK NCP .40
SIDEKICK PLUS .112
SUPERKEY .62
TURBO PASCAL W/BCD-80/87 .62
TURBO TUTOR .45
TURBO GRAPHICS TOOLBOX .59
TURBO EDITOR TOOLBOX .59
TURBO DATABASE TOOLBOX .59
TURBO GAMEWORKS .45
TURBO LIGHTNING .59
TURBO NUMERICAL TOOLBOX .59
TURBO PROLOG .59
TURBO PROLOG TOOLBOX .59
TURBO BASIC .59
TURBO BASIC TELCOM .65
TURBO BASIC EDITOR TOOLBOX .65
TURBO BASIC DATABASE TOOLBOX .59
EUREKA EQUATION SOLVER .95
TURBO "C" COMPILER .62
WORD WIZARD .44
- business tools
TAS + ACCOUNTING .59
TAS + DATABASE .59
DEVELOPER'S DATABASE .139
- bpi
BPI GENERAL ACCOUNTING .167
- breakthrough s/w
TIMELINE .299
TIMELINE GRAPHICS .107
- broderbund software
MEMORY MATE .42
TYPE ! .31
PRINTSHOP .35
PRINTSHOP COMPANION .32
PRINTSHOP GRAPHICS (1/2/3) EACH .27
TOYSHOP .39
TOYSHOP REFILL .19
- bourbaki
1 DIR + .55
THE SFE UTILITIES .CALL
- bridgeway publishing
FAST TRAX .33
MENU BLOCKS .59
- bytel
GENIFER .189
- core international
CORE FAST .89
- central point software
COPY TO PC (IBM & MAC) .21
PC TOOLS DELUXE .44
COPY TO PC OPTION BOARD DELUXE .107
- compuserve
COMPUSERVE STARTER KIT .22
- computer associates
SUPERCALC 4 .209
SUPER PROJECT PLUS .219
SPREADSHEET AUDITOR .79
SUPER PROJECT EXPERT .393
SILVERADO .91
G/L & A/P & A/R & PAYROLL .CALL
- concentric systems
R&R/RELATIONAL REPORT WRITER .89
- csi/consumer software
DUET .57
- cosmos software
ADVANCE REVELATION .485
- dac software
DAC EASY ACCOUNTING BONUS PACK .95
DAC EASY ACCOUNTING VER. 2 .59
DAC EASY PAYROLL VER. 2 .42
DAC EASY BASE .32
DAC EASY RE-PORT .29
DAC EASY MATE .29
- delta tech.
DIRECT ACCESS .51
- design software
DS BACKUP PLUS .49
DS RECOVER .27
DS OPTIMIZER .36
DS TUTOR .21
- digital research
CONCURRENT PC DOS XM .171
CONCURRENT DOS 386 (3 USERS) .292
GEM COLLECTION .79
GEM DRAW PLUS V.2 W/BUS. LIB. .169
GEM GRAPH .167
GEM WORD CHART .109
GEM DESKTOP PUBLISHER .179
GEM DESKTOP .37
GEM PRESENTATION TEAM .257
- dow jones co.
DOW JONES NEWS RETRIEVAL .21
- executive systems
X TREE PRO .65
HOT .86
- fox company
FOX BASE PLUS V.2 SINGLE USER .239
FOX BASE PLUS V.2 MULTIUSER .342
SINGLE USER LIMITED RUNTIME .179
SINGLE USER UNLIMITED RUNTIME .262
MULTIUSER LIMITED RUNTIME .291
MULTIUSER UNLIMITED RUNTIME .371
- fifth generation
FASTBACK PLUS .95
- funk software
SIDEWAYS .42
IN-WORD (FOR LOTUS) .59
NOTE WORTHY .44
WORKSHEET UTILITIES .55
- fox & geller
QUICK CODE + .147
- gazelle system
Q DOS II VER.3 .39
BACK IT .71
- generic software
GENERIC CADD 3/D .178
GENERIC CADD LEVEL 3 .119
GENERIC CADD V.3.0 .57
AUTO CONVERT .29
DOT PLOT .29
AUTO DIMENSIONING .29
DRAFTING ENHANCEMENTS #1 .29
DRAFTING ENHANCEMENTS #2 .29
ELECTRONIC SYMBOLS#1 .29
IGES MINI OR MAINFRAME LINK .137
FLOWCHARTS MODULE .29
HYDROLICS MODULE .29
BASIC HOME DESIGN .29
COMMERCIAL & RESENDICIAL .29
ALL OTHER SYMBOLS .CALL
- good software
CELEBRITY .55
- golden bow systems
V OPT .42
V CACHE .39
V FEATURE DELUXE .109
- imsi int'l.
DR. HALO III .75
DR. HALO III W/MOUSE SYS. MOUSE .95
DR. HALO III W/GENIUS MOUSE .59
TURBO HALO .75
DPG/DESKTOP PUBLISHERS GRAPHICS 89
PAGE PERFECT .CALL
- intersecting concepts
BACKUP MASTER .5
DISPLAY MASTER .5
- intuit
QUICKEN .3
- javelin corporation
JAVELIN PLUS .16
- lifetree software
VOLKSWRITER 3 .14
- living videotext
THINK TANK .9
MORE (MAC) .14
READY .5
- lightgate
FELIX .10
- lotus development
LOTUS 123 .29
SYMPHONY .41
HAL .9
MANUSCRIPT .35
FREELANCE PLUS .33
LOTUS METRO .5
- logitech
LOGIMOUSE W/ + PACK S/W .7
LOGIMOUSE W/ + PACK S/W & CARD "BUS" .
LOGIMOUSE PS/2 MOUSE .
PC PAINTBRUSH OPTION PACK .
GENERIC CADD OPTION PACK .
LOGITECH HI-RES MOUSE .
- macropac
101 MACROS FOR M/S EXCEL/MS DOS .
101 MACROS FOR LOTUS 123 .
101 MACROS FOR SUPERCALC .
101 MACROS FOR SYMPHONY .
101 MACROS FOR dBASE III + .
101 MACROS FOR WORDPERFECT .
101 TIPS, TRICKS, TRAPS 4 LOTUS .
- mansfield software group
K EDIT .
- mark williams co.
FAST FORWARD .
- master soft
WORD FOR WORD .
- mathsoft
MATHCADD VER.2 .
- meca
MANAGING YOUR MONEY .
- meridian
CARBON COPY PLUS .
- micropro int'l.
WORDSTAR PROPACK VER.4 .
WORDSTAR 2000 + PERSONAL EDITION .
WORDSTAR 2000 + LEGAL VERSION .
- micrografx
PC DRAW .
WINDOWS DRAW W/CLIPART .
IN-A-VISION .
WINDOWS GRAPH .
WINDOWS CONVERT .
WINDOWS CAD .
WINDOWS CAD CLIPART .
THE DESIGNER .
- micrologic corp.
TORNADO NOTES .
TORNADO NOTES W/LIBRARY .
- microrim
R BASE FOUR DOS .
DB GRAPHICS .
CLOUT 2 .

DISCOUNT MICRO WORLD™

68 PAUL DRIVE SUITE C SAN RAFAEL CALIFORNIA 94903 ■ 415 492 8890

CALL NOW ● TOLL FR
1-800-225-3034 CA.
Terms: Prices include 3% c discount. Add 3% for cha card orders. Shipping on m software is $5.00. CA order 6% sales tax. Price and avail ity are subject to change with notice.

Your #1 Source For Discounts!

Call Now - Toll Free 1-800-225-3034 CA.

mastercharge VISA

M/S Excel $295

Clipper $353

Super Calc 4 $209

PROGRAM INTERFACE 350
EXTENDED REPORT WRITER.....177
• microlytics
GOFER 37
• microsoft
WRITE/MAC 100
PAGEVIEW 35
BOOKSHELF 215
WORD /MSDOS 210
WORD /MAC.....221
EXCEL /MSDOS.....295
EXCEL /MAC 221
MACRO ASSEMBLER 88
WINDOWS V.2 62
WINDOWS 386.....117
WINDOWS DEVELOPMENT TOOLKIT. . .299
"C" COMPILER V.5 257
QUICK "C".....62
MULTIPLAN 121
QUICKBASIC COMPILER 65
BUS MOUSE W/EASY CADD 117
BUS MOUSE W/PAINTBRUSH 105
BUS MOUSE W/WINDOWS 135
SERIAL MOUSE W/EASY CADD 117
SERIAL MOUSE W/PAINTBRUSH 105
SERIAL MOUSE W/WINDOWS.....135
WORKS /MSDOS.....119
WORKS /MAC 177
FLIGHT SIMULATOR /MSDOS & MAC . . .33
ACCESS (COMMUNICATIONS) 139
CHART 242
PROJECT.....277
LEARNING DOS.....33
FORTRAN COMPILER 269
COBOL COMPILER.....412
• microstuf c/o d.c.a.
CROSSTALK 16 95
CROSSTALK MARK 4 119
REMOTE.....95
• migent
ABILITY VER. 2 109
MIGENT POCKET MODEM.....151
• monogram/tronix
DOLLARS & SENSE W/FORECAST 99
• nantucket
CLIPPER.....353
MC MAX /MAC 149
• new england software
GRAPH IN THE BOX 55
• northedge software
TIMESLIPS ADV. V.3 109
• nolo press
WILL WRITER 37
• owl international
GUIDE.....107
• paperback software
VP PLANNER.....44
VP PLANNER PLUS.....89
VP INFO 63
VP EXPERT 63
VP GRAPH 63
• paul mace software
MACE + UTILITIES.....49
H TEST H FORMAT 49
GRASP 49
• palantir software
WINDOWS FILER.....99
WINDOWS SPELL 45
WINDOWS IN-TALK 99
WINDOWS CALC .....CALL
• peachtree software
COMPLETE BUSINESS ACCOUNTING. .147
• paten & paten
FLOW CHARTING II + ...137
• p.c.s.g.
LIGHTNING 62
• pinpoint
MICRO COOKBOOK 29
• personics
@ BASE 99
SMART NOTES 47
SEE MORE (FOR L. 123).....47
• peter norton
NORTON UTILITIES VER. 4.0.....49
ADVANCED NORTON UTILITIES 77
WINDOWS CALC .....CALL
NORTON COMMANDER.....39
INSIDE THE IBM PC (BOOK ⅓DISK) 24
NORTON GUIDES / PASCAL.....44
NORTON GUIDES / ASSEMBLY 52
NORTON GUIDES / "C" 52
NORTON GUIDES / BASIC 52
TWINPACK / ASSEMBLY & PASCAL.....65
TWINPACK / ASSEMBLY & "C" 72
• prosoft
FONTASY.....39
ADD ON FONTS 1/2/3 EACH.....30
• prime solutions
DISK TECHNICIAN REG 65
DISK TECHNICIAN W/RLL SUPPORT . . .72
• productivity software
PRD + ...59
• quarterdeck
DESQVIEW VER. 2.0.....71
DESQVIEW COMPANION #1 62
QEMM/386 EXP. MEMORY MANAGER . . .38
• qualitas
386 TO THE MAX 59
• revolution software
CRUISE CONTROL 27
• reference software
GRAMMITIC II 49
• rightsoft
RIGHTWRITER.....62
• solution systems
BRIEF EDITOR.....171
• simon & schuster
TYPING TUTOR 4 30
FULLY POWERED PC (BOOK/DISK) 22
WEBSTERS SPELLING CHECKER 39
WEBSTERS THESAURUS 39
SPEED READING TUTOR.....27
• stella
STELLA BUSINESS GRAPHICS.....55
• software group
ENABLE 366
• softclone
MIRROR MIRROR II.....44
• surpass
SURPASS.....349
• spinnaker
EIGHT IN ONE ACCOUNTING 33
RUNNING START.....27
• sterling castle
BASIC DEVELOPMENT TOOLS 82
BEST CHOICE/DECISION ANALYZER. . .35
"C" FUNCTION LIBRARY W/EGA & TSR .95
MANAGER 45
• softlogic
DISK OPTIMIZER VER. 3.....39
DOUBLE DOS VER. 3 31
SOFTWARE CAROUSEL VER. 3 45
CUBIT VER. 3.....40
MAGIC MIRROR.....49
@ LIBERTY 59
• softstyle
PRINTWORKS (LASERS) 67
PRINTWORKS (DOTMATRIX) 42
• storage dimensions
SPEEDSTOR 55
• software directions
PRINT Q 65
• software publishing
PFS:PROFESSIONAL FILE.....132
PFS:PROFESSIONAL WRITE.....108
PFS:PROFESSIONAL PLAN.....65
PFS:FIRST CHOICE 109
PFS:FIRST PUBLISHER 59
PFS:FIRST PUB. ALL FONT KITS.....27
HARVARD TOTAL PROJECT MANAGER .323
HARVARD GRAPHICS.....267
• springboard
THE NEWSROOM PRO.....79
CERTIFICATE MAKER.....34
• symantic
Q&A.....195
Q&A WRITE 109
IN BOX/PC E-MAIL.....58
• swfte int'l.
GLYPHICS 89
• sublogic
KINGS QUEST I/II/III 32
JET 32
SCENERY DISKS (ALL).....21
• traveling software
LAP LINK 75
LAP LINK + ...85
• turner hall
4 WORD (FOR LOTUS) 64
4 WORD VIEWS .....CALL
SQZ PLUS!.....57
NOTE-IT!.....53
SPELLIN.....50
SPREADSHEET ANALYST 57
• three/d/graphics

NEC Multi-sync $579

Vega Deluxe $179

Ventura PUBLISHER $469

PERSPECTIVE.....131
• unison world
PRINTMASTER PLUS 35
NEWSMASTER 59
• vericomp
SOFT BYTES 29
• vm personal sw
RELAY SILVER.....79
• white crane
BROOKLYN BRIDGE 79
• wordtech systems
DB XL 87
QUICKSILVER DIAMOND 279
• word perfect corp.
WORD PERFECT VER. 4.2. 189
WORD PERFECT LIBRARY REL. 2 57
WORD PERFECT EXECUTIVE 99
WORD PERFECT/MAC .....CALL
DATA PERFECT 262
PLAN PERFECT.....166
• water works
RAM LORD.....55
• xerox corp.
VENTURA PUBLISHER REL. 2.....469
• z soft
PC PAINTBRUSH PLUS 67
PUBLISHERS PAINTBRUSH.....169

HARDWARE

• amdek
AMDEK 410 BLACK & WHITE.....155
AMDEK 410 AMBER 155
AMDEK 410 GREEN 149
AMDEK 1280 BLACK & WHITE W/CARD .660
CD/ROM LASER DRIVE 605
• ast research
SIX PAC PLUS W/64K 145
SIX PAC PLUS W/384K 227
SIX PAC PREMIUM W/256K 209
RAMPAGE AT W/512K.....329
RAMPAGE XT W/256K.....272
ADVANTAGE AT W/128K 249
PREVIEW OF I/O CARD 139
• ati
ATI EGA WONDER CARD 189
ATI VGA VIP 272
• belkin
SWITCHBOX SERIAL/2 POSITION.....47
SWITCHBOX PAR./2 POSITION 47
• chips "memory"
256K 100NS 12
256K 120NS 12
256K 150NS 12
64K 150NS 3
• citizen printer co.
CITIZEN 180-D 180CPS.....173
MSP 40 240CPS 80COL 296
MSP 45 240CPS 132COL 384
MSP 50 300CPS 80COL 355
MSP 50 COLOR OPTION 66
MSP 55 300CPS 132COL 449
MSP 55 COLOR OPTION 71
TRIBUNE/EPSON LQ1000 EMUL. CARD. .78
TRIBUNE 224 24PIN/132COL.....579
CITIZEN PREMIERE 35 DAISYWHEEL . .539
• complete pc
COMPLETE ANSWERING MACHINE. . . .239
COMPLETE FAX 337
COMPLETE HAND SCANNER 177
• curtis
UNIVERSAL COMPUTER STAND.....22
UNIVERSAL PRINTER STAND 20
COMPUTER TOOL KIT 21
• everex
300/1200BAUD INT. MODEM W/S/W 87
1200/2400BAUD INT. MODEM W/S/W . . .171
2400/1200/300BAUD EXT. MODEM 199
I/O MINI XT W/PAR/SER/CLK 61
I/O MINI AT W/PAR/SER 61
RAM 3000 DELUXE-AT OK TO 3MEGS. . . .99
PS/2 2400 INT. MODEM.....191
PS/2 2400 EXT. MODEM 227
EGA DELUXE W/PAR. PORT 129
EVERGRAPHICS MONOCARD W/PAR. PORT 77
• genoa
SUPER EGA HIGH RES.800x600 249
• hayes
ALL MODEMS.....CALL
• hercules
GRAPHICS CARD + W/RAMFONT 179
IN COLOR CARD W/ 16 COLORS.....289
• intel corporation
MATH COPROC.8087-PCXT-5MHZ.....112
MATH COPROC.8087-PCXT-8MHZ.....157
MATH COPROC.8087-PCXT-10MHZ.....199
MATH COPROC.80287-AT-6MHZ 174
MATH COPROC.80287-AT-8MHZ 259
MATH COPROC.80287-AT-10MHZ 284
MATH COPROC.80387-386-16MHZ 464
• kraft
PREMIUM II JOYSTICK 27
PREMIUM III JOYSTICK 32
• microspeed
FAST 88 W/ V20CHIP.....96
FAST TRAP (MOUSE/LIKE).....95
• megahertz
9 MHZ XT SPEEDUP CARD! IBM ONLY. .119
• mountain
20 MEG. HARDDISK CARD INT 529
30 MEG. HARDDISK CARD INT 550
50 MEG. HARDDISK CARD INT 653
• nec
NEC MULTISYNC MONITOR.....579
NEC MULTISYNC PLUS 905
NEC MULTISYNC XL.....2120
NEC P660 PAR. PRINTER.....454
NEC P7 PAR. PRINTER.....595
• panasonic
KXP1080i/M2 189
KXP1091i/M2 207
KXP1524 24PIN WIDE CARR.....567
KXP1592.....409
• paradise
EGA AUTOSWITCH-480 151
VGA PLUS 262
VGA PROFESSIONAL.....387
• plus development corp.
20 MEG HARD CARD 557
40 MEG HARD CARD 779
• quadram
ULTRA VGA 297
• samsung
12" AMBER MONO. MONITOR.....85
• seagate
20 MEG-XT W/CONTL. CARD.....295
30 MEG XT W/CONTL. CARD.....333
20 MEG-AT H/H 272
30 MEG-AT F/H.....524
• smt
SMT NO SLOT CLOCK 39
• stb
STB EGA PLUS 249
STB CHAUFFEUR (HT) 191
VGA EXTRA 299
• toshiba
TOSHIBA P321SL P/S 479
TOSHIBA P341SL P/S 639
TOSHIBA P351SX P/S 995
360K XT/AT DISK DRIVE 85
1.2 MEG. AT DISK DRIVE 109
3.5 XT/AT DISK DRIVE.....109
1.44 3.5 DISK DRIVE 109
• taxan
TAXAN 770 MULTISCAN MONITOR 525
• tecmar
TECMAR EGA 480 349
TECMAR EGA 800 419
• video 7
VEGA DELUXE EGA 179
VEGA VGA 272
• zuckerboards
ALL CARDS.....CALL

MISCELLANEOUS

• amaray
DISKETTE HOLDER/50 DISKS 5¼.....12
DISKETTE HOLDER/100 DISKS 5¼.....17
DISKETTE HOLDER/30 DISKS 3.5.....10
• maxell corp.
5¼ DS 10 PACK DISKS 11
5¼ HD-AT 10 PACK DISKS 21
3.5 DS 10 PACK DISKS 19
• generic disks
LOW PRICES!.....CALL
• sony
3.5 DS 10 PACK DISKS 20
3.5 SS 10 PACK DISKS 15
3.5 HD/AT 10-PACK 45
• printer cables
IBM PARALLEL CABLE 6'.....10
IBM PARALLEL CABLE 12'.....17
• sgl waber electric
LG20 SURGE PROTECTOR 25
DOS OPERATING SYSTEMS.....CALL

DISCOUNT MICRO WORLD™

68 PAUL DRIVE SUITE C SAN RAFAEL CALIFORNIA 94903 ▪ 415 492 8890

Call For Programs Not Listed

Terms: Prices include 3% cash discount. Add 3% for charge card orders. Shipping on most software is $5.00. CA. order add 6% sales tax. Price and availability are subject to change without notice.

REALIZABLE FANTASIES

By Jim Warren

Intellectual Shareware

"Let us stand on each other's shoulders, rather than each other's toes."
— Dick Hamming

This computer column differs from most. Its focus is on what has not yet been done, but should be, rather than on discussing the latest widgets or who's skewered whom. It's for entrepreneurs, eager-to-be-ex-employees, impending millionaires, and other agents of change — the dreamers and activists who convert the present into the future.

This column provides open information exchange. It continues the idea sharing that was invaluable to the development of megamonster mainframes in the '40s, and equally invaluable to the explosive growth of personal computing in the '70s. Such sharing was the essence of the multihour "mapping and random access" of the Homebrew Computer Club's legendary biweekly meetings — where multitudes of problems were candidly posed and numerous solutions readily shared.

Nowadays the Homebrew is mostly history, and some folks prefer patents to progress. However, many innovators remain inclined to freely share worthy visions. Send ideas to share to Jim Warren, Realizable Fantasies, 345 Swett Road, Woodside, CA 94062. Credit will always be given to the authors of published proposals, unless they request anonymity.

As an earned footnote: "Realizable fantasies" was a phrase for feasible futures, coined by Bob Albrecht at the old People's Computer Company.

A Debugging And File-Crash Recovery Tool

If you are a software or systems designer — or almost any serious computer user — you have often encountered both of the following scenarios:

Case 1: While debugging, testing or tuning a system, you need to perform the same sequence of complex interactions, over and over. This often involves a combination of keyboard input, time-sensitive actions or delays, mouse or pointer input, etc., ruling out use of a command file. It would be valuable to automate such interaction sequences.

Case 2: While you're working with a slightly-imperfect system (I've heard they exist...), some combination of user actions creates a malfunction. It may have an unclear, complex cause. It may also cause massive file scrambling, requiring extensive, expensive reconstruction from the last file backup.

For bug analysis, it would be valuable to have a record of the sequence of actions before the malfunction. For file repair, it would be utopian to automatically reproduce the many-hours action sequence since the last file-backup.

Solution: There could be an inexpensive I/O-stream recorder through which all input and output passes to and from user-controlled devices — keyboard, mouse, graphpad, etc. Both serial and parallel devices could plug through it to any computer. It could monitor all signals, recording them and their timing on a removable tape or disk (probably separate from the computer's mass stores).

Perhaps is should be called an Eavesdropper — or a Computer Interaction Annunciator (CIA).

For Case 1, the recording medium might be an endless loop of tape, long enough to store the longest interaction test sequence.

In Case 2, for bug analysis, the medium would need enough capacity to store all user interaction of one session. For automated file reconstruction, it would need to store user interaction from one file backup to the next — which, of course, all users perform daily...

Automated Scholarship Searches

If that's too technical for you, try this application, for which most readers probably have great empathy:

Data on the vast multitudes of available college grants and scholarships — and the unending variety of their requirements — could be made available for processing on personal computers. Support programs could "personalize" individuals' funding searches and data utilization. (Computerized scholarship and grant information services now exist, but most have the cost, inconvenience and lack of personalization inherent in mail-in questionnaires or institutional remote-query systems.)

Easily-identified "customers" range from high school counseling offices and post-secondary scholarship offices to computer-owning parents traumatized by college costs.

Such systems could include basic grant and scholarship information with multiple indices and search paths. Enhancement programs could provide highly interactive computer-aided search assistance, computer-prompted guidance in drafting effective funding applications, and even low-level expert systems providing advice regarding finance decisions.

Further enhancements could pursue more exotic academic and career counseling and testing, almost without limit.

Such systems could even automate the generation of funding applications, based on packaged application skeletons — at least until the granting institutions automated their recognition and rejection.

The cost-benefit analysis of a reasonably priced system is obvious for parents. Cost-constrained schools and overburdened counselors can also see their value. And, since information about grants and scholarships changes constantly, the database publishers would have a form of built-in copy protection and after-sale market due to the need for updates at least once a year.

This is an obvious application for computer CD-ROMs — large database, a mass user base, periodic republication.

Backyard SDI — A Hawkish Proposal

Starlings are irritating birds. Flocks of starlings are called communes. Larger groups are called commun-ers, and the largest hordes are called commun-ests.

Nowadays the Homebrew is mostly history, and some folks prefer patents to progress. However, many innovators remain inclined to freely share worthy visions.

Many Americans know that such communest hordes can take over entire neighborhoods, bombing them without warning. Such areas are then known as communest plots.

A high-tech defense system to keep backyards safe from invasion by these communest hordes has been suggested — the Starling Defense Invention, or "SDI." It consists of a microcomputer-controlled .22-caliber pistol mounted in a 3-axis motorized positioner with a CCD scanner and large lens known as the Big L-eye.

The Big L-eye looks for incoming birds, decides whether they are good birds or bad birds, and automatically shoots bad birds out of the sky. Since SDI systems are programmed by computer experts, they cannot malfunction malfunction.

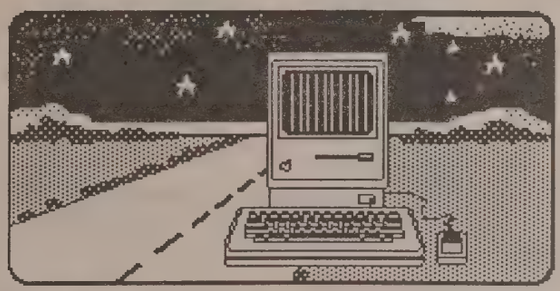
Show your neighbors how safe they would be with SDI next door. Tell them how reliable computers are. Show them how computers can tell bad birds from good birds. Explain what happens to bullets that miss their targets — call it "new technology fallout." Tell them how a new SDI next door will be tested. Sell your friends and neighbors on SDI. (Variations on an idea from Steuart Bjornsson of American Data Cable, 916/622-3465.)

Finally, since neural networks have replaced artificial intelligence as today's computer fad, John also noted that "neural" is an anagram of "u learn." □

Copyright © 1988 by Jim Warren. All rights reserved. *Jim Warren founded the West Coast Computer Faire, the* Silicon Gulch Gazette *and* Infoworld *newspapers, Video Initiative, and the DataCast proposal for broadcast-based paperless electronic newspapers utilizing personal computers. He was the founding host of the PBS* Computer Chronicles *series, founding editor of* Dr. Dobb's Journal, *and founding president of the Microcomputer Industry Trade Association.*

New releases
from the #1
Mac Software Company

SEE MICROSOFT'S FUTURE
AT
MAC TO THE FUTURE II



800-SOFTWARE and MacWEEK invite you to see the latest versions of Microsoft's Mac software, and dozens of other products, plus free lectures.

Tuesday, June 21, 11:00a.m.-6:00p.m.
at the San Francisco Hyatt Regency (Embarcadero).

NEW VERSION-POWER POINT 2.0

PowerPoint 2.0 boasts full color support for the Mac II, a host of dazzling background shading effects, and a spell checker and thesaurus. It can also import graphics in MacPaint, PICT, PICT III, and EPS (used in Illustrator and Freehand) formats.

$249

NEW VERSION-EXCEL 1.5

Excel 1.5 now has full color support for spreadsheets and charts, completely customizeable dialog boxes and menus, and additional math functions.

$259

NEW VERSION-FILE 2.0

File 2.0 includes a sampler disk containing every form made by leading form maker Avery. File 2.0 also has enchanced mail merge capability with Word, improved speed, and a custom mailing labels format.

$139

WORD 3.02

Microsoft Word is the best selling Mac word processor in the world. Period. Word 3.02 offers integrated outlining, customizable command menus, style sheets and long document support.

$249

For Reservations or 800-SOFTWARE's Free Catalogue Call (415) 644-4880

800-SOFTWARE

918 Parker Street, Berkeley, CA. 94710

Hands-on computer training in PageMaker

- Introducing PageMaker.
- Sizing, cropping and shading of graphics.
- Changing type specs and repositioning text.
- Creating special design effects.

• $50 Coupon (Applicable towards PageMaker training), when you buy PageMaker. Authorized dealer.

TOPS

Authorized Dealer
TOPS network running over low cost phone cable allows you to connect PCs and Macs. It allows you to share files and printers. Applications can exist in any computer. Translator utility will convert popular file formats.
We sell, install and train.
Complete systems start from $495.

AUTOCAD RELEASE 9
Meeting the needs of an evolving market.

RELEASE 9 features:
- Pull down menus
- Dialogue boxes
- File portability & much more

AUTOCAD

Ask for a demonstration

Authorized AutoCAD dealer
AutoCAD is registered trademark of Autodesk, Inc.

MONARCH XT
- 8088 10MHz
- 640K 1 Floppy
- 20MB Hard Disk
- Mono Monitor
- Serial/Parallel/Clock/Game

$995

NEC Multispeed EL $1395

Zenith 183 10MB Portable $1995

Zenith 181 Portable $1495

Intel Above Board 286 0K with FREE Sidekick Plus $195

D-Link Networking
Why buy printer switches when you can share files and printers with D-LINK?
- 3 Network interface cards.
- D-LINK Network software.
- Cables.

$795

Novell Solution
3 Station Arcnet Network:
- Novell Netware ELS Operating system.
- 3 Network interface cards.
- 1 Passive Hub.

$1095

Ethernet alternatives available

monarch computers
847 San Pablo Ave.
Albany, CA 94706
Phone (415) 526-7741
Fax (415) 526-7859

SERVING YOUR COMPUTER GRAPHIC NEEDS

CAD • PRESENTATION GRAPHICS • DESKTOP PUBLISHING • VIDEO & ANIMATION

New products for your presentation needs:
General Parametrics VS Professional with Natural Image Display
KLOSS Color Computer Video Projectors
JVC Professional Video Equipment

Hours
Mon.-Fri.10am-6pm
Sat. by Appt.

master charge VISA

COMPUTER GRAPHICS CENTER, INC.
444 High Street, Palo Alto
(415) 325-3111

REVIEWS

RECREATIONAL/ EDUCATIONAL

Grey Seas, Grey Skies (1987 edition)

Revision by: *Thomas A. Konczal*
Published by: *Simulations Canada*
For: *Apple II series (64K)*
List Price: *$60.00*
Reviewed by: *Mike Markowitz*

When it first appeared in 1983, *Grey Seas, Grey Skies* was probably the most accurate and thoughtfully designed *unclassified* computer game on modern naval warfare. Written in plain BASIC, with no graphics beside a title screen, and a ponderous menu-driven user interface, it did not have the makings of a commercial success. The players had to plot the positions of their ships by moving cardboard markers around on a big paper grid. The game could be played between two humans, or against a very capable computer "opponent." You could select one of seven ready-made scenarios, or construct your own, from a roster of 80 different ships and submarines.

Since *Grey Seas* was published, a lot of new Soviet, American and European ship classes and naval weapons have appeared. The game has been updated and expanded to include 200 ship types. The stars of the show are the new Soviet aircraft carrier, which reportedly will be named *Kremlin*, and the controversial future US Navy "Seawolf" attack submarine. Very small vessels (patrol craft, minesweepers, and missile boats) are now also well represented. The program files now take up both sides of a 5.25" disk, and many new options and variations have been added. Owners of the earlier version can obtain an update for $15. The update uses Diversi-DOS, an excellent high-speed operating system, to speed disk access. A Commodore 64 version also is available, but we have not seen it.

The game models the dilemmas faced by every ship commander: Do I light up my radar or turn on my active sonar to pinpoint the enemy (thereby revealing my own position)? Do I wait patiently, relying on passive sensors to gradually build up a fire control solution? Do I fire off all my missiles in one grand salvo, to swamp the enemy's defensive countermeasures, or should I fire one shot at a time to conserve scarce ammunition?

Each game "turn" represents six minutes of real time, including segments for radar search, sonar search, weapons status, fire control, and maneuvering orders. Due to the large number of calculations required during every turn, the game can become quite slow if more than about ten ships are involved. On the Apple IIGS the turns pass pretty quickly, but an accelerator card (or a large measure of patience) is advisable for owners of regular Apple IIs.

Modern warships have been described as "eggshells armed with hammers." The results of the Falkland Islands war of 1982 showed that one well-placed torpedo, bomb or missile could easily destroy a ship. The Persian Gulf war, however, seems to indicate that big ships are very hard to sink with small missiles. *Grey Seas, Grey Skies* gives results that are consistent with this ambiguous pattern. Sometimes one hit will sink a ship, at other times a burned-out hulk will remain defiantly afloat until the end of the game.

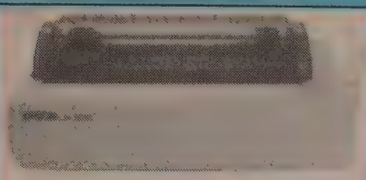
WE DELIVER INSTALL SERVICE & TRAIN YOU

REPAIR & SERVICE
CALL FOR SERVICE CONTRACTS
Your Guaranteed #1 Source for Authorized Repair
FREE DELIVERY OF COMPUTERS IN SAN FRANCISCO

PLEASANT HILL
1527 Contra Costa Boulevard
Pleasant Hill, CA 94523
Off Hwy 680
Contra Costa Blvd Exit
(415) 682-8696
(415) 634-TOWN

SAN FRANCISCO
760 Market Street, Ste 219
(Phelan Bldg)
S.F., CA 94102
(415) 956-8696
(415) 956-TOWN
Fax (415) 989-TOWN
Mon-Fri 8-6, Sat 10-5

MOUNTAIN VIEW
2455M Old Middlefield Way
Mt. View, CA 94043
(415) 962-8696
(415) 962-TOWN
Mon-Fri 9-6, Sat 10-5

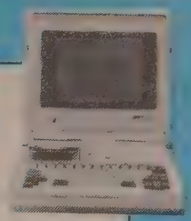


EPSON PRINTERS

Epson technology has long set the industry standard for computer printers. Epson's reliability and high performance are available in printers that offer remarkable value.

LQ 800
FX86E/FX 286E
LQ 500/LQ 800
LQ 1000/LQ 2500
LQ 850/LQ 1050
EX 800/EX 1000

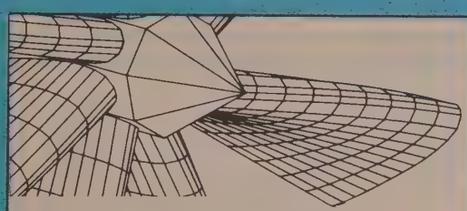
Zenith data systems



Zenith's new **Z-183** 20 MB laptop has a built-in hard drive powered rechargeable battery. So you can run it anywhere, anytime. The **Z-183** boasts 20 megabytes of hard disk storage; 640K of memory, and a 3½" floppy drive which can run most PC/XT compatible software. What's more, it features our top-rated blue, super-twist back-lit LCD screen.

Also available
Zenith 181
Zenith 183/20
Zenith Flat Screen Monitor
Zenith 1200/2400 Modem
Zenith 41/2 External Floppy
Authorized **Zenith** Dealer

New 286 Portable
In Stock
All Accessories in Stock!
Best Prices In Town!



INTRODUCING:
AUTOCAD
RELEASE 9

Featuring a new user interface with pull-down menus, icon menus, file portability across operating systems, twenty new text fonts, and more. We listen to our customers.

Authorized **AutoCAD** Dealer
AutoCAD is registered in U.S. Patent and Trademark Office by AutoDesk Inc.

AUTOCAD®

AST PREMIUM 286/386 EXTRAVAGANZA

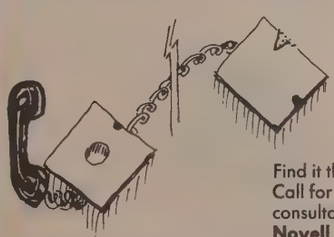
Models Available:
AST-40, 70 & 130
AST 286 10 MHZ 40 MB Full Mono System

Lowest Prices
Largest Stock
Best Selection

Now Authorized Dealer For AST Products

IN TOWN!

Networking & Modems
Novell & Hayes
9600 Baud V Series Modems



Have you been searching for the perfect link?

Find it through us and **Novell.** Call for estimate & consultation. Authorized **Novell** Dealer.

We Also Carry:

Toshiba Laptops	NEC
Samsung	Microsoft
Multitech Acer	Intel
Wyse	Iomega

We are proud to be an Authorized Dealer

Novell	**Epson**
AutoCAD	**AST**
Zenith	**WYSE**

COMPUTOWN
"More Than A Computer Store"

MICRO SERVICE CENTER INC.

Maintenance and Repair for Personal Computers

FAST On Site Response
By Qualified Technicians

QUICK In Shop Turn Around
Free Pick-Up and Delivery

- IBM
- Compaq
- AT&T
- Apple
- Clone
- Okidata
- Epson
- Call for Others
- NEC
- HP Laser
- Apple Laser
- Wyse
- Data Products
- Terminals
- Xerox

Upgrade Your PC or XT to 10MHz (Speed)

$300.

Hardware purchases thru MSC come with one year on site service including parts and labor.

- Free Pickup & Delivery
- New Motherboard
- New 150W Power Supply
- New Frame
- Total of 8 Expansion Slots
- Floppy Drive Cleaned and Aligned
- Hard Disk Checked for Bad Clusters and Truncated Files
- 24 Hour Turnaround

Help Is As Near As Your Phone

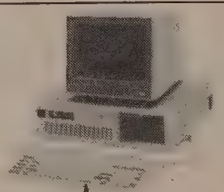
San Francisco	Oakland	Mid Peninsula
(415) 362-3261	(415) 770-0460	(415) 362-3261
San Jose	**Walnut Creek/Concord**	**East Bay**
(408) 292-6336	(415) 671-2279	(415) 770-0399

Maintenance Agreement Features

- 4 Hour On Site Emergency Response
- Two Preventative Maintenance
- Equipment Loaners *(when needed)*
- Telephone Consultation

Complete Computer Systems Including Hard Drive!

FLASH: Wholesale clone dealer opens its doors to the public, offering complete computer systems including AT's, 386 supersystems, training and more. Call today for details!



$549
Base System includes HD

Sturgill & Booth

4429 Enterprise Fremont, CA 94538

415-657-5945

Grey Seas, Grey Skies belongs in the library of every comuter gamer interested in modern naval tactics. It is one of the few naval games that seriously considers nuclear weapons (a subject most North American naval writers prefer to ignore). If you have nuclear-armed missiles or torpedoes you can fire them, and they reliably destroy everything in the target area, but you pay a political penalty of 100 victory points. There is a rather startling reverse-video flash of the screen when a nuclear weapon detonates. The effects of electromagnetic pulse (which would fry most of the surviving radars and electronics for many miles around) are not modeled in the game.

If this classic game is ever redesigned, I hope the programmers recode some of the number crunching in assembly language to cut down on waiting time. There ought to be some way to put coastlines and variable water depths on the map. It would be nice to be able to design your own ships, or punch in ship data from standard reference books. Within the limits of 64K, a full graphic interface may be too much to hope for; but then sometimes the best graphic interface is the player's imagination . . . (Simulations Canada, P.O. Box 452, Bridgewater, Nova Scotia, Canada, B4V 2X6.)

Postcards

Created by: *Carol Manley*
Published by: *Activision*
For: *Apple IIe, IIc (64K); IIGS (512K)*
List Price: *$34.95*
Reviewed by: *Mike Markowitz*

Wacky postcards are a delightful part of American Folklore. Soon after the invention of photographic film, some comic genius discovered that negatives could be cut and pasted together to produce amusing, improbably combinations, like the jackalope (half jackrabbit, half antelope) or the tomato bigger than a railroad car.

Postcards is actually two completely different products. For the Apple IIGS it is simply a clip art disk for use with *PaintWorks Plus*, or any compatible graphics package. For 8-bit Apples, it is a stand-alone graphics program, with its own clip art files on both sides of a 5.25" disk. It is, in fact, the very same graphics program by Robert Clardy that was used in Activision's *Paper Models* last Christmas. It does *not* work properly on the IIGS version, for reasons I could not discover. It does, however, work correctly on the Laser 128 now.

With either product, you create a postcard by selecting a "scene" or background, and then pasting various people, animals or objects into it. The scenic possibilities include: Arctic, Beach, City, Country Road, Desert, Farm, Main Street, Moonscape, Mountain, Volcano, and Blank.

There are 11 buildings, 12 street signs, 11 "objects," 19 edibles, 28 people, nine vehicles and 42 animals. With no previous practice, I was able to design and print out three humorous postcards in 20 minutes. At least I thought they were humorous. Everyone else thought they were stupid and tasteless.

The IIGS version has much sharper resolution, as you might expect, and if you have a color ribbon for the ImageWriter II, the color printouts look pretty good. The package includes a glue stick and a stack of blank postcards so you can paste up your creations and mail them. The package, alas, does not include stamps. There is an order form if you need more blank postcards and are too lazy to cut them out of cardboard yourself.

The IIGS version of *Postcards* has two scenes on each "page" of graphics, so when you use *Paintworks Plus* you tend to get a second, unwanted postcard scene on your printout. The only way I could figure out to avoid this was to laboriously

ARGO COMPUTERS

EVEREX FOR EXCELLENCE!

ALL EVEREX SYSTEMS ON SALE!!!

ARGO 80286 Monographics System
FULLY COMPATIBLE WITH IBM AT!!!
PRICE INCLUDES: 640KMB, RAM, 1.2MB, floppy/hard disk controller (WDC chipset) Everex Hercules compatible 80/132 columns hi-res. Monographics display card, printer port, AT style keyboard, clock/calendar, 8 expansion slots (2-8 bit, 6-16 bit). 96 hour burn-in & testing according to your specifications. Made in the U.S.A, 1 year warranty, (over 200 pages, hardbound manual & documentation). Excellent User References! Mono monitor.

Monographic System.....**$995**
EGA ARGO System.....**$1379**

Super ARGO 80286 EGA Color System
Same as Mono System except with NANAO ANALOG/TTL/CGA/HERC/PGA/VGA Graphics 8060S 14'' SUPER HI-RES EGA Color Monitor with EVEREX Enhancer auto-switch CGA/VGA/HERC/MONO/EGA/Color Graphics All-In-One Display card. All other specifications same as Mono System.
.....**$1499**
8/10 MHz 1/WTS Mono System.....**$1200**
8/10 MHz 1/WTS EGA System.....**$1600**
8/10 MHz 0/WTS Super EGA System.....**$1689**

10 MHz 0/WTS 2 Serial 2 Parallel, Mono System.....**$1378**
10 MHz 0/WTS EGA System.....**$1599**
10 MHz 0/WTS Super EGA System.....**$1768**

ARGO 286-1700C System
80286-12 running at 8 and 12MHz, 0 wait state design, 1MB DRAM, four 16-bit and four 8-bit expansion slots, 1.2MB floppy, 101 keyboard, Western Digital floppy and hard disk controller, system clock/calendar with battery backup, 192 Watt U/L power supply. Made in U.S.A
Monographics System.....**$1500**
EGA System (Nanao 8086s Flexscan monitor and Micro Enhancer Deluxe) / Auto Switch card.....**$1879**

ARGO 386-16MHz
80386-16 running at 16/8MHz keyboard selectable clock speeds. Selectable wait state. Zero or One from the keyboard. 1MB DRAM, six 16-bit and two 8-bit expansion slots, combined floppy and hard disk controller, 101 keyboard, clock/calendar with battery backup, 192 Watt U/L power supply. Made in U.S.A.
Monographics System.....**$1965**
20MB Seagate ½ Ht., HD with System, ST225....**$239**
42MB Seagate ½ Ht., HD with System, ST251....**$429**

DEALERS: PLEASE CALL FOR SPECIAL BARE-BONE QUANTITY PRICE

Please visit us for all custom configurations and price quotes.

THE PC UPGRADERS

UPGRADE YOUR PC TODAY!

We specialize Exclusively in UPGRADING your IBM PC/XT/AT, Compaq, and Compatibles.

Repair your PC today! No minimum charges!

We have full repair facility for IBM PC/XT/AT/Compaq/AT&T/L.E./and most IBM look-alike compatibles. Free testing, trouble shooting. All work done with prior approval. Free estimates! No need to call. We will call you with a free — no obligation estimate within 3 working days.

IBM PC/XT/AT Hard Disk Installation.....Only **$29**

Seagate
Complete Kit with Controller Card, Seagare 65msec, HD, Cables, Installation Software and Hardware. Brand New. Fully Tested/Formatted. 1 Year Warranty.
ST-225, 20MB Kit.....**$255**
ST-238, 30MB Kit.....**$277**
ST-251, 42MB, 38ms/without controller card.....**$388**

Monitors Special
Nanao 8086s Flexscan.....**$525**
Taxan EGA Monitor.....**$419**

Mouse and More
Mouse Systems Mouse.....**$99**
Logitech C7 Serial Mouse.....**$72**
IMSI Mouse with Dr. Halo.....**$99**
Enable.....**$329**
VP Planner(1,2,3 Super Clone).....**$29**
Speedstore Universal Version.....**$79**
Everturbo/12MHz (New).....**$349**
No Slot Clock.....**$29**

Everex Modems
Mini-Pocket Modem 1200B.....$139
Evercom Internal 1200Baud/2400Baud.....$99/$175
Evercom External 2400Baud.....$199

Everex Video Boards
Evergraphics Plus.....$79
Evergraphics Deluxe.....$128
Micro/Enhancer Version with Parallel Port.....$139
Micro Enhancer without Parallel Port.....$119
EVGA.....$299

Everex RAM Boards
Mini Magic.....$45
Maxi Magic EMS.....$80
Multifunction EMS.....$99
RAM 3000 (AT).....$109
RAM 3000 Deluxe.....$99
Magic I/O (XT).....$55
Magic I/O (AT).....$55
Magic I.....$94

Everex Tape Backup
TEAC 40MB Int. Cassette.....$580
TEAC 60MB Int. Cassette.....$650
Archive 60MB Ext. Cartridge.....$650
Wangtec 60MB Int. Cartridge.....$757

Brother Printers, Ribbons, all kinds of Printer Cables, Diskettes, and Okidata Laser Printer Toner are also available.

15099 Hesperian Boulevard, San Leandro, CA 94578
Phone: Sales (415) 276-2211
All Other Calls (415) 276-2367 • FAX 415-276-2368

Hours:
Mon-Fri 10AM-5PM
Saturday 12PM-4PM
CLOSED SUNDAY

Terms:
Cash/Certified Funds Only
Personal/Company Checks/P.O.'s
Accepted with prior approval

IBM Software for $3.49

Thousands of IBM/Compatible Public Domain and Shareware Programs Are Available from the Micro Star Library, and Priced at **Only $3.49**

ORDER TODAY on our Toll Free Phone Lines

ORDERS SHIPPED OUT SAME OR NEXT DAY

GAMES

JET SET FLIGHT SIMULATOR (102) Be a jet pilot at the controls.
GLOBAL THERMAL NUCLEAR WAR (105) Frightening possibilities.
ARCADE GAMES (106) Has Kong, a 3-D Pacman, Bricks, Pango. (Requires color.)
BASIC GAMES (107) Pacman, Lunar Lander, Startrek, Meteor, Breakout, and others.
CARD GAMES (109) Canasta, hearts, draw poker & bridge.
STRIKER (110) Defender-like game. "Top Gun" in space.
FLIGHTMARE (112) Futuristic fighter pilot game. (Requires color graphics adapter.)
SLEUTH (117) Who done it?
MONOPOLY WITH GRAPHICS (118) Color or monochrome.
DUNGEONS AND DRAGONS (119)
GAMES IN BASIC (124) Lander, biorhythms, desert, Phoenix, Star Wars, others.
TRIVIA GAME (130-131) (2 disks) Extensive trivia game.
PROFESSIONAL BLACK JACK (148) Become a pro.
QUEST (152) Role playing adventure fantasy game. (Requires color.)
PINBALL (153) Many games. Also includes a great maze game.
BRIDGE PAL (171) Complete game of contract bridge, with tutorial.
FENIX (193) Just like the famous arcade game.
SPANISH HANGMAN (196) Fun way to learn Spanish.
BONZOWARE (199) Multi-faceted entertainment for adults only.
KID-GAMES (GAM 8) Animals math, clock game, alphabet, etc.
3-D CHESS (GAM9) Incredible. 2D and 3D. Many levels. Play back moves, store games.
WIZARD'S LAIR (GAM14, GAM15) (2 disks) Like Dungeons & Dragons, w/maps, sorcery, etc.

EDUCATION

FUNNELS AND BUCKETS (201) A fun way to learn basic math.
MATHPAK (202) Tutorial with lessons in higher mathematics.
PC-TOUCH (204) Typing tutorial.
EZ-SPELL (206) Checks spelling.
EDUCATIONAL PROGRAMS (207) Preschool and elementary.
BASIC TUTORIAL (208) Learn programming with BASIC.
BEGINNING SPANISH (211) Tutorial
BIBLEQ (214) The Bible with this question-answer tutorial.
SPANISH II (232) Sequel to #211.
AMY'S FIRST PRIMER (248) Teaches alphabet, numbers, shapes, colors, counting, etc.

MUSIC

PIANOMAN 3.2 (301) Turn your keyboard into a piano. Fun!
PC-MUSICIAN (302) Compose, save, and play music.

WORD PROCESSING

PC-WRITE 2.71 (401-402) (2 disks) Latest version of this popular program w/spelling checker.
NEW YORK WORD (403-404) (2 disks) Powerful split screen editing, mail merge, etc.
LETTER WRITER (405) The easy way to write letters! Popular.
PC-STYLE (413) Analyzes style and readability of your writing. Works with Wordstar, PC-Type, & ASCII.
PC-TYPE+ (421-423) (3 disks) Excellent. Has mail merge, 100,000 word spelling checker. Interfaces with PC-File +, PC-Style.

SPREADSHEETS

EZ-SPREADSHEET (509) Easy but powerful. For the beginner.
PC-CALC+ (512-514) (3 disks) Jim Button's famous Lotus clone.

SPREADSHEET TEMPLATES

LOTUS MACROS (601) Save hours of work. (Requires Lotus 1-2-3)
LOTUS SPREADSHEET TEMPLATES (602) Ready made. (Requires Lotus 1-2-3)
TECHNOJOCK TUTORIALS (626) Teaches Lotus and dBase, menu-making, etc. Excellent.

ACCOUNTING AND FINANCE

PC-GENERAL LEDGER (701) Popular accounting system. Easy!
MR. BILL (702-703) (2 disks) For billing customers; invoices, client reports, audit trail.
CPA LEDGER (706-708) (3 disks) Complete GL.
PC-STOCK (712) Analyze market trends. Includes graphics.
PC-PAYROLL (714) Menu driven payroll system.
PERSONAL FINANCE MANAGER (715) Household budget manager. Keep track of checking, savings, investments.
CHECKBOOK (752) Complete system with online help.
EMPLOYEE MANAGEMENT (793) Teaches principles of the famous One-Minute Manager.

DATABASE PROGRAMS

PC-FILE+ 2.0 (801, 805, 837) (3 disks) Rated better than dBase III+ by Consumer Reports.
PC-GRAPH (802) Creates graphics directly from PC-FILE.
FILE EXPRESS 4.0 (803-804) Powerful system. Allows 32,000 records. Sorts up to 10 key fields.
NEWBASE (809) User-friendly menu-driven DB system.
DBASE III ROUTINES (815) Over 60 helpful dBase III routines.
WAMPUM (824-825) (2 disks) Dbase III clone. dBase III compatible

GRAPHICS

KEYDRAW CAD SYSTEM (1001-1002) (2 disks) Popular. (Requires color graphics.)
3-D (1003) Create and edit 3-D objects. (Requires color graphics.)
SIDEWAYS (1007) Prints your text sideways.
ANIMATOR (1011) Create animated pictures on your PC.
SIMCGA (1027) Use with Hercules graphics card/compatibles to run programs requiring CGA.
READ MAC (1041) Digitized pictures of Ashley, Cheryl, Brooke and Spock. ADULTS ONLY!
FINGERPAINT (1050) Use keyboard or mouse to draw. Like MacPaint. (Requires CGA or EGA)
DANCAD 3-D (1051, 1052) (2 disks) Create 3-D graphics. Rotate, magnify, etc. Runs on CGA, EGA, or Hercules/compatibles.

TELECOMMUNICATIONS

Q-MODEM 3.0 (1101-1102) (2 disks) Fast modem program.
RBBS-PC (1107-1109) (3 disks) Multi-user BBS.
PROCOM 2.42 (1112-1113) (2 disks) Hacker's delight. Redial capability. Latest version.

SECURITY/HACKING

UNPROTECT PROTECTED PROGRAMS (1202) Make backups of protected software.
UNPROTECT II (1203-1204) (2 disks) More ways to backup commercial software.
UNPROTECT III (1205) Unprotect Softguard protection.
UNPROTECT IV (1206) More programs you can unprotect.

DOS

DOS TUTORIAL (1301) Teaches you to use DOS.
DOS HELP (1302) Convenient help when a problem arises.
STILL RIVER SHELL (1304) Run DOS commands from a menu. Makes using DOS easy.
BATCH FILE TUTORIAL (1305) Utilize batch file processing.
DOS TIPS (1311, 1314) (2 disks) Advanced tutorial.

BASIC

PC-PROFESSOR (1401) BASIC tutor.
BASIC PROGRAM GENERATOR (1402) The menu driven way to write programs.
SWISS ARMY KNIFE (1406) Tools for programming in BASIC.

APPLICATIONS

FORM LETTERS (1907) Commonly used form letters and business applications.
EZ-FORMS (1908) Make forms to meet different needs.
MAIL MASTER (1910) Create mailing lists. Print letters and labels.
ASTROLOGY 9.4 (1916) Calculate your own chart. Prints wheel.
HOME INVENTORY (1966) Track all your possessions.
LOTTO MASTER (1981) Play the lotteries w/scientific methods.
MEMBERSHIP SYSTEM (1984) Great for clubs, churches, etc.
FAMILY HISTORY (2203-2204) (2 disks) Create files and geneological reports.
DR DATA LABEL (2327) Powerful mailing list program. Customize labels to size and format.
CITY DESK (2513) Simple desktop publisher.

UTILITIES

DESK COMMANDO (2607) Better than Sidekick. Many features.
EPSON PRINTER UTILITIES (2705) Change print modes on Epson or compatibles.
LINCOMATIC BANNER (2714) Creative banner making.
LIGHTNING PRESS (2718) Printshop clone. Includes graphics for greeting cards, letterheads, posters, newsletters, etc.
MASTERKEY (2805) Like Norton's. Retrieve deleted files.
AUTOMENU (3003) Make PC menu driven. Multiple passwords.
PC LABS BENCHMARK (3039) Comprehensive testing. Compare computers before you buy.

RELIGION

THE BIBLE (3301-3306) (6 disks) Old Testament, King James version.
THE BIBLE (3307-3308) (2 disks) New Testament, King James.
WORD WORKER (3309-3310) (2 disks) Bible search program. New Testament, King James.
BIBLEMEN (3330) Excellent Bible quiz program.

MICRO STAR

POST OFFICE BOX 4078 • LEUCADIA, CA 92024-0996

HOURS: Monday - Saturday 7 AM - 5:00 PM, Pacific Time

TERMS: We accept MasterCard, VISA, Checks (allow checks 10 days to clear), Money Orders, and COD (add $4).
MINIMUM ORDER: 5 Disks, $3.49 per disk. For 3½" format add $1/disk.
SHIPPING & HANDLING: $3.50 (Total per order).

CALL TODAY FOR FREE CATALOG

NATIONAL: 800-443-6103
CALIF: 800-443-7430
FOREIGN: 619-436-0130

erase the unwanted scene. Annoyingly, the size of the postcard is just a little bit bigger than the size of the working "window" in *Paintworks*, so you have to move around a bit. This was a sloppy design oversight that should have been caught in beta testing.

Nevertheless, *Postcards*, in either version, represents exactly the sort of silliness that most appeals to computer people. I had fun with it; and that's something I have never been able to say about any database program . . . (Activision, P.O. Box 7287, Mountain View, CA 94039 (415) 960-0518.)

Tetris

By: *Spectrum Holobyte*
For: *Commodore 64/128 ($24.95), IBM ($34.95 on 5¼" or 3½" disk)*
Reviewed by: *Sue Albert*

Can you beat the Russians? Since its introduction by Spectrum Holobyte of Alameda, *Tetris* has received a lot of media attention as the first known computer game designed in Russia to be marketed in the U.S. of A. Detente and brotherly love aside, are we ready to let little children play with this seemingly simple game, billed as addictive, but in reality closer to insidious? Is this another Russkie plot? I leave it up to you.

Sure *Tetris* looks innocent enough. The intro screen is kind of arty and the music is depressingly Russian. Nothing to worry about here. With your trusty joystick you choose a game level from 0 to 9 and can mercifully toggle sound effects instead of music during play. The play screen action takes place on a central black panel surrounded by some rather well done, if boastful graphics, of Russia's pride, Red Square on May Day, the manned space probe, and the Olympic hockey team (Ouch! that hurt!), but O.K. We can take it! Let's play!

Starting with the 0 level of play, one of six colorful shapes, a variation on four squares, slowly drifts at random down the central playing panel. With the joystick you can rotate and align it, and with a pull on the stick quickly place it at the bottom of the pit. You score points for speed, but the object of the game is to fit the shapes so they form an unbroken horizontal line. As soon as you do this the line disappears with a sizzle giving you more space and time to build the minimum ten lines across that it takes to progress to the next, faster level.

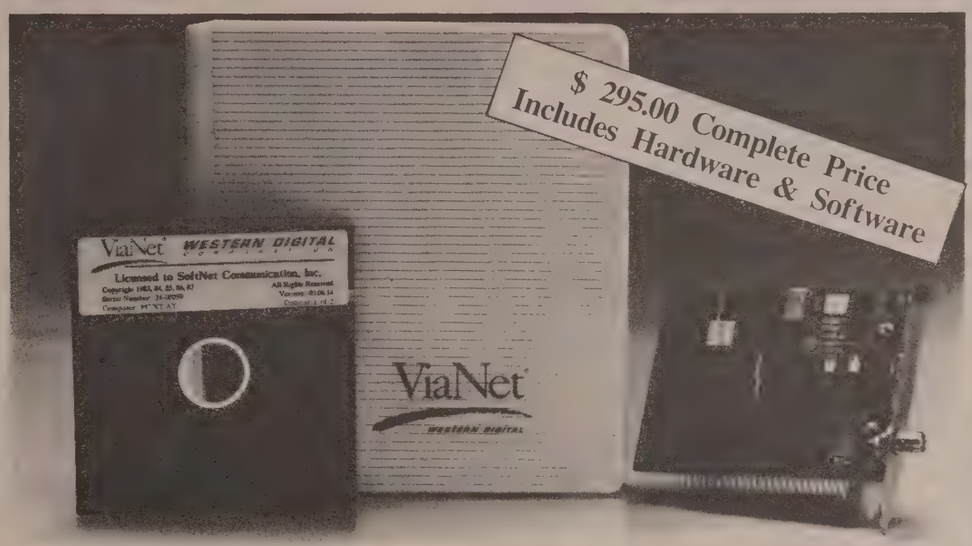
When the panel is filled you go to the next screen, or if you haven't finished ten lines, start over. A running status is shown over the graphic which gives your points scored, number of lines completed, and shows you the next shape to fall . . . but who has time to look? Even with the slowest level, as the pieces build closer to the top you have less and less time to make decisions.

Only the most disciplined will be able to leave this game after just one try. If this is a plot, it may have backfired because this game is possibly one of the most appealing shape recognition and reflex trainers I've seen. It would be an enjoyable educational tool for the ablebodied and "invisible" therapy for the handicapped. Maybe they just want to distract us while they buy all our Levi's with the profits?

There are some variations between the Commodore and IBM versions, but nothing that takes away from the pleasure of the game. Both allow you to pause play and restart with a keystroke. The IBM version has a toggle for the preview of pieces, lets you start the pieces falling from five different heights, and keeps a running score of how many times a shape has appeared in one game.

So is it a plot or just shared playfullness? Send your highest score to the Kremlin. Let's get the cold war on a saner level.

ViaNet & KAL1000
Local Area Network
The Perfect Pair!!!



The performance leader of all LAN systems based on Western Digital's ViaNet (R) software.

- 2 Mega bits/sec
- Serverless, fully distributed
- Supports DOS 3.xx
- Can share All resources
- Unix-like DOS shell
- Password Protection
- File & Record lock
- Easy to install & use

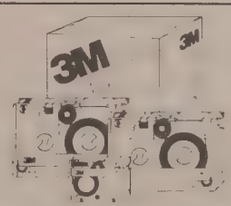
SoftNet Communication, Inc.

Call Toll Free!
(800) 533-1157
15 Hillcrest Drive, Great Neck, NY 11021 (516) 829-6536

Performance Through Quality.

Free!!
One Scotch™ 5 1/4" Head Cleaning Trial Size Kit with each purchase of 50 Diskettes.

5 1/4" DSDD $0.73
5 1/4" DSHD (HIGH DENSITY) . . $1.49
3 1/2" DSDD $1.55
3 1/2" DSHD (HIGH DENSITY) . . $4.29
PRICED PER DISKETTE. 10 DISKETTES PER BOX.



3M
THE LEADER IN DATA CARTRIDGES

DC 1000 . . . $13.73
DC 2000 . . . $18.25
DC 300XLP . $21.15
DC 600A . . . $22.94
DC 600XTD . $24.25
CALL FOR OTHER TYPES & FORMATS

CALL (408) 436-0500

TEAMMARK international, inc.
440 Roberson Lane, San Jose, CA. 95112
HOURS MON. - FRI. 8:00 AM to 5:30 PM

3M Authorized Distributor Magnetic Media Division

Dealer Inquiries Welcome

HERB'S IBM SPECIALS OF THE MONTH

10% OFF

TOTAL PURCHASE WITH THIS AD

DAC EASY		Harvard	
Bonus Pack	$75	Total Project	
Accounting	39.50	Manager II	$195
Acct Tutor	17.50	Presentation	
Payroll	27.50	Graphics	60
Payroll Tutor	12.50	Prof Pub	150
Port	32.50	Graphics	195
Mate	32.50	Total Proj Mgr	95
Cornerstone	39.50		
Professional Network	55		
Professional Plan	75		
Professional Write	95		
Professional File	95		
Able One	20		
PFS First Pub (1.01)	65		
PFS First Choice (2.01)	75		
Money Decisions	20		
Portfolio Decisions	20		
Electric Pencil PC	25		
R Graph	25		
InteCalc	25		
IntePlan	25		
IntePert	25		
InteMate	25		
Practiword	25		
2 Key (for Lotus 1,2,3)	10		

GAMES

Ace of Aces	22.50
Mind Shadow	12.50
S.D.I.	24.50
Personal Financier	7.50
Pro Predictions	7.50
Life-Style Analyzer	7.50
DonJonQuest	7.50
Oil Barons	7.50
Swift Calc PC	34.50
Data Manager PC	34.50
Word Writer PC,	37.50
Mind Prober	9.50
Print Shop Companion	32.50
Major League Manager	12.50
Bop'n Wrestel	14.50
Mind Shadow	12.50
DOS Works	23.50
Hard Ball	22.50
Quickshot X Joystick	17.50
Money Mate	7.50

Herb's Discount Software

Mountain View
80 W. El Camino Real
(415)967-5500
Open: 10-6 Mon-Sat.

Fremont Warehouse
4406-A Enterprise Place
(415)490-6335
Open: 10-6 Mon-Sat 12-4 Sun

We Sell Retail Below Wholesale.
Easy Freeway Acess To Both Locations.

Mavis Beacon Teaches Typing!

By: *Mike Duffy, Glenn Wichman, Norm Worthington and others*
Published by: *Software Toolworks (1987)*
For: *Apple IIGS (512K) color or monochrome, IBM PC/XT/AT*
List Price: *$44.95*
Reviewed by: *Mike Markowitz*

Like Betty Crocker, Mavis Beacon does not really exist. She is "a symbol of excellence in education." Her dazzling smile brightens the package of the best educational program yet for the Apple IIGS.

Like many left-handed writers, I was always stubbornly unable to master the arcane art of touch typing. My uncle Charlie repaired typewriters, and we acquired a huge, noisy secondhand IBM electric when I was about nine years old. Since I showed some interest in the machine, I was duly packed off to the local business school for typing lessons with the parental hope that I might acquire at least one marketable skill. Like the music lessons and the tennis lessons, this training bore no fruit. I could never quite accept the idea that I wasn't supposed to look down at the keys, and I remain, to this day a four-finger hunt-and-peck addict, with occasional bursts of six-finger productivity.

After a couple of hours with Mavis, however, I'm starting to believe I could really learn typing if I cared to. The words-per-minute are still pretty pathetic, but in every session I'm hitting a new "personal best."

There is a huge amount of code here — over 35,000 lines of "C," according to programmer Norm Worthington; and when it loads into RAM on a 512K system, there are about thirty bytes free. *Mavis* fills two 800K disks. If you have the IIGS Finder, you should check out these disks on the desktop, just to see the neat customized file icons.

The program starts up from the ProDOS 16 Program Launcher. The first dialog box offers three choices: an introductory guided tour, a "Help for New Users" demo, and an option to jump right in and start the lessons. When you start your first lesson, the program asks for information about yourself and your typing experience. The program can keep track of multiple users and their progress.

Each lesson begins with a "Chalkboard" that shows the lesson plan. You have many alternatives. you can change the drill to a game, for example. The drill screen depicts your computer and keyboard, with ghostly animated hands that echo your actions. The game screen is a car racing game, with the speed of your car set by your typing rate and the characters displayed in puffs of smoke by skywriting aircraft. Feedback is prompt, detailed and warm:

> EXCELLENT ACCURACY. THIS LESSON EXCEEDS YOUR PREVIOUS AVERAGE. SCORES FOR THIS LESSON WERE: 16 WPM ACCURACY 94% ADJUSTED WPM: 15.

Once you get past the initial drills with nonsense syllables and words, the exercises include riddles, jokes, quotes from great literature, and items from the *Guiness Book Of World Records*.

At your request, the program can display graphs documenting your performance on every key. It will even print a report card. A simple text-based dialog-driven "Resume Writer" is included as a separate program in the package.

There are lots of gadgets, like a metronome, a clock, etc. There are thoughtful little touches, like a super-sharp Monochrome mode, (for users without a color monitor) and a sound toggle, so you won't disturb others working in the same room. Instead of the standard QWERTY keyboard, you can select the more logical and efficient Dvorak layout. The mouse and pull-down menus are used effectively.

The 62-page manual includes a fascinating history of the typewriter, along with information on the theory of typing education and a detailed explanation of how the program operates.

Those who enjoy pumping irony may note that the Apple IIGS version of *Mavis* is a typing tutor program for a computer with a truly awful keyboard. The IIGS keyboard keys are flat, squarish, packed too tightly together, and have a dead "feel." The old IIe, in contrast, had a high-quality keyboard that was a delight to the fingertips. Apple is perfectly capable of making an excellent detached keyboard — look at the Macintosh SE and the Mac II.

Hardware design flaws, however, are not the fault of software authors. The team at Software Toolworks has done something truly extraordinary with this program. A lot of the "educational" software we are going to get for the IIGS will be the same old soporific drill-and-practice, tarted up with super hi-res graphics and stereophonic sound. *Mavis*, however, is an intelligent tutoring system. Until recently, this sort of thing was at the cutting edge of research in artificial intelligence. Implementing something this sophisticated on such a small, slow CPU was quite a feat of programming.

Surprisingly few (male) computer people are good typists, perhaps because of stupid cultural stereotypes that decree that typing is women's work, and programming isn't. The implementation of office automation in some professions, like Engineering, is crippled by the refusal of male executives and middle managers to learn keyboard skills. Programs like *Mavis* could be a solution. A version for the IBM PC is available, and versions for most other popular systems are planned. (Software Toolworks, 13557 Ventura Blvd., Sherman Oaks, CA 91423. 818/907-6789. Software Toolworks titles are also distributed by Electronic Arts.)

BOOKS

The Elementary Apple IIGS

By: *William B. Sanders*
Published by: *Computer! (1986), softcover, 262 pages*
List Price: *$15.95*
Reviewed by: *Mike Markowitz*

Documentation for the Apple IIGS so far has either been too lightweight (the Owner's Guide, for example), or too heavy (the Technical Reference, intended for programmers). The newness of the IIGS means there are few people around with much experience on the system, and the inevitable lag between writing and publication means that much of the available published material was based on preliminary versions of the software, and prototype hardware.

The Elementary Apple IIGS is billed as "a friendly beginner's guide" to this powerful new machine. In effect, it is a rehash of the material in the Owner's Guide, a few hints and tips on ProDOS, and an extensive tutorial on AppleSoft BASIC. Programming the IIGS in AppleSoft BASIC is like hitching your new Porsche to an ox-cart. Get Real, OK?

There is a good brief chapter on the Super High-Res graphics and sound, and an excellent chapter on "You and Your Printer."

The book is spiral bound (to lie flat). There is a good index, and some useful Appendices. It is not worth sixteen dollars, unless you really need a tutorial on Applesoft BASIC. (Computer! Books, P.O. Box 5406, Greensboro, NC 27403.)

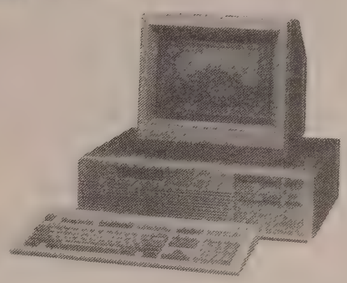
QSP INC — QUALITY SERVICE PRICE LEADER FOR '88

Sales (408) 435-8222 • 780 Montague Expwy • Ste. 207 • San Jose, CA 95131

QSP SUPER MICRO SYSTEMS

SYSTEM	MEMORY	BIOS	PRICE
386-20MHz - 0 Wait, Full*	1MB (256K, 80ns)	Phoenix/Award	$2505
386-16MHz - 0 Wait, Full*	1MB (256K, 100ns)	Phoenix/Award	2404
386-20MHz - 0 Wait, Jr.*	1MB (256K, 80ns)	AMI BIOS	2299
386-16MHz - 0 Wait, Jr.*	1MB (256K, 100ns)	AMI BIOS	1999
286-12MHz - 0 Wait, Jr.*	512K (256, 80ns)	AMI BIOS	1199
286-12MHz - 1 Wait*	512K (256K, 120ns)	Phoenix	1049
286-10MHz - 0 Wait, Jr.*	512K (256K, 100ns)	AMI BIOS	1099
286-10MHz - 1 Wait*	512K (256K, 120ns)	Phoenix	999
286-8MHz - 0 Wait*	512K (256K, 120ns)	Phoenix	920
8088-2 XT - 10MHz*	256K (256/64K, 150ns)	ERSO	425
8088-2 XT - 8MHz*	256K (256/64K, 150ns)	ERSO	399
Bare Bone XT 8MHz*	256K (256K/64K, 150ns)	ERSO	239

** Call for configuration information.*



VALUE ADDED:

- 30 Days money-back guarantee!
- 1 year warranty on parts & labor.
- Full technical support provided!
- Full documentation and set-up software!
- **Excellent references from government and Fortune 500 companies!**

EVALUATION:

Ask about our free trial policy. Evaluate the system in your office for 7-10 days without obligation!

MOTHERBOARDS

386-20 Full, 0 Wait w/ 1MB	$1925
386-20 Junior, 0 Wait w/ 1MB	1560
386-16 Full, 0 Wait w/ 1MB	1655
386-16 Junior, 0 Wait w/ 1MB	1320
286-12 Full, 1 Wait, 0K	409
286-10 Junior, 0 Wait, 0K	330
286-10 Atega 1000, 0K	384
286-8 Atega 800, 0K	372
XT Turbo 8 or 10MHz, 0K	85

DRIVES

360K Mitsumi Floppy Drive	$70
360K Fujitsu Floppy Drive	75
360K/1.2MB Teac Floppy Drive	89/115
20MB ST-225 w/o cont.	229
20MB ST-225 w/cont.	279
30MB ST-238 w/ RLL cont.	345
30MB ST-4038 full ht. 39ms	529
40MB ST-251 half ht. 65ms	449
40MB ST-251-1 28ms	499
40MB ST-4051 full ht . 39ms	469
44MB ST-4053 full ht. 28ms	620
44.6MB Miniscribe 28ms	635
72MB Miniscribe 28ms	Call
80MB ST-4096 full ht. 28ms	795

MODEMS

Comstar 2400 Internal	$155
Suntek 1200 Internal	79

INPUT/OUTPUT CARDS

Mini I/O XT - 2sp, 1pp, game port, clock/calendar, 2nd sp optional	$55
Mini I/O AT - same as above w/o clock/calendar	55
2nd Serial Port upgrade XT/AT	25
TWINCOM Serial card - 1 sp w/ 2nd option	24
MONOPAK XT - Monographics w/ 1 sp, 1pp, game port, clock/calendar	69
MONOPAK AT - same as above w/o clock/calendar	69

VIDEO CARDS

Monochrome Graphics Card	$41
Color Graphics Card	41
EGA Card - Autoswitch, 640 x 480 resolution	155

CONTROLLER CARDS

Suntek 2 Dr. Floppy Cont.	$22
Hard Disk Controller Card	85
WD WA2 Hard/Floppy for AT	145
RLL Hard Disk Controller	95
Special Floppy Cont. for 1:2 MB Drive on XT	75

MEMORY EXPANSION CARDS

RAM Card 576K w/ 0K	$29
MEMOPLUS XT - 2MB EMS w/ 0K	85
MEMOPLUS AT - 2MB EMS w/ 0K	99
DO-ALL XT - 1.5MB EMS + I/O w/ 0K	149
DO-ALL AT - 3MB EMS + I/O w/ 0K	190

MONITORS

Goldstar Amber Mono	$65
Tatung Amber Mono	98
Tatung Green Mono	96
Quadrant 14" Paper White	135
Goldstar RGB Color	245
Tatung RGB Color CM-1322	325
Goldstar EGA	345
Tatung EGA CM-1380F	419
Nanao Multisync 8060H	569
Nanao Multisync 8060S	595
Tatung Multisync CM-1495	495

POWER SUPPLIES

200 Watt, ASTEC UL, CSA listed (top line)	$95
180 Watt switching, for XT	49
165 Watt switching, for XT	42

KEYBOARDS

101 Key enhanced mechanical Alps switch	$65
84 Key AT style mechanical Alps switch	52

CHASSIS

AT case - full size, holds 5 1/2ht. drives	$69
Mini AT case for XT - reset button & LEDs	59
XT case - IBM style	29

LOCAL AREA NETWORK

Arclan - LAN controller board	$155
Active Hub - 8 port, 2000 ft. distance	350
Passive Hub - 4 port, 100 ft. distance	55
Novell™ software	Call
Vianet™ software	Call

- The Complete Package — Call

HARDWARE: Cards & cables
SOFTWARE: Novell or Vianet
INSTALLATION: Hardware & Software
TRAINING at customer site

CALL FOR A FREE ESTIMATE ON NETWORKING YOUR OFFICES. OUR SPECIALIST WILL VISIT YOUR FACILITY AND PROVIDE DETAILS ON HARDWARE & SOFTWARE REQUIREMENTS AND LAYOUT SPECIFICATIONS!

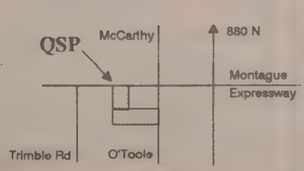
Prices subject to change without notice. Novell and Vianet are trademarks of Novell Inc. and Vianet respectively.

PRICE LEADERS

SPEED CARD	$179
AT/ XT KEYBOARD	25
MONO/ COLOR CARD	39
MONOCHROME MONITOR	65

PRINTERS

CITIZEN ALL MODELS	Call
STAR NX-100	180
EPSON EX-800	425



Belmont Computer Products

Turbo XT System **$LOW**

- 4.77/8 MHz Switchable
- 640K on Board
- 360K Floppy Drive w/Controller
- AT Style Keyboard
- 150W Power Supply
- Mono Graphic Card w/Printer Port
- 1 Yr Limited Warranty

10 MHz XT System **$CALL**

AT 286 System $LOW

- 6/10 MHz 0 Wait
- 640K RAM on 1 MB Motherboard
- Real Time Clock, Calendar
- 1.2 MB Floppy Drive w/Controller
- 220W Power Supply
- AT Style Keyboard
- Mono Graphic w/Printer Port
- Western Digital FD/HD Controller
- 1 Yr Limited Warranty

12 MHz 0 Wait System **$CALL**

386 20 MHz 0 Wait EGA System **$2050**

- 1 MB RAM on 2 MB Motherboard
- Landmark=27 MHz
- EGA 640x480 on Board
- Western Digital FD/HD Controller
- Teac 1.2 MB Floppy Drive
- 80287 & 80387 Socket
- 2 parallel & 2 Serial on Board
- Enhanced Keyboard

16 MHz 0 Wait System **$1999**

Motherboard

Turbo XT	$75
10 MHz XT Motherboard	85
AT 6/10 MHz, 0 Wait	255
Baby AT 6/10 MHz, 0 Wait	255
AT 6/12 MHz, 0 Wait	299

Interface Card

Mono Graphic Card	$45
Color Graphic Card	45
Multi I/O (XT)	55
Floppy Disk Card XT/AT	25/45
Everex EGA 640x480	125
Everex 800x600	145
Everex VGA	239
Paradise 640x480 Autoswitch	160
Genoa Super-Hi 800x600	179
AT Multi I/O	45
AT WA2 FD/HD Controller	109
DTC 5287 RLL FD/HD Controller	149

Modem

Easy Data 1200 Ex	$75
Easy Data 2400 Ex	165
Everex 1200 Baud	75
Everex 2400 Baud	165

Floppy Drive

Fujitsu 360K/1.2M	$69/83
Teac 360K/1.2M	73/86
Toshiba 3.5" 720K	89
Toshiba 3.5" 1.44MB	115

Keyboard

BTC 5060 XT/AT	$39
BTC 5339 Enhanced	49
Keytronic Enhanced	49

Misc.

150/200W P.S.	$40/62
LogiMouse C7/Bus	65
Logi Paint/CAD	20/35
XT/AT Case	28/55

Hard Disk

Seagate-225 Kit	$255
Drive Only	205
ST-238 Kit (30M)	285
ST-251 (40M 39MS)	355
ST251-1 (40M 28MS)	450
ST 4053 (43M 28MS)	465
ST-277R (60M 39MS)	469
ST-4096 (80M 28MS)	720

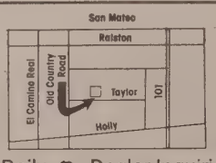
Monitor

Samsung Mono	$70
Samsung Color	220
Samsung EGA	325
Casper Mono	75
NEC Multisync II	560
NEC Multisync GS	200
Nanao 8060S	520

Printer

Epson LX800	199
Epson LQ500	359
Star NX1000	179
Citizen 120D	145
Citizen 180D	159
Citizen MSP-40	299
Citizen MSP-45	399
Ricoh 3200Q (Daisywheel, 132 column)	199

Belmont Computer Products
1775 Old Country Rd. #21
Belmont, CA 94002
(415) 598-9058

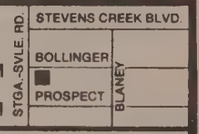


Hours: M-F 9-7 ● UPS Shipping Daily ● Dealer Inquiries Welcome ● Co. Purchase Welcome

ONE YEAR PARTS & LABOR WARRANTY ON COMPLETE SYSTEMS

MAXBIT COMPUTER, INC.

HOURS:
M-SAT.
10 AM-6:30 PM
SUN.
11 AM-5:30 PM



ADD-ON CARD

XT MULTI I/O	55.00
AT I/O	55.00
RS-232 (SERIAL) CARD	24.00
GAME CARD	18.00
MONOGRAPHIC/PRINTER	45.00
COLORGRAPHICS/PRINTER	45.00
EGA/PRINTER CARD	139.00
2.5 MB RAM CARD	79.00

HARD DRIVES

SEAGATE 20MB ST4026	279.00
SEAGATE 20MB ST-225	215.00
SEAGATE 30MB ST-238	247.00
SEAGATE 40MB ST-251	425.00
SEAGATE 60MB ST-277R	575.00

COMPLETE XT TURBO

- 256K RAM ON 640K M/B
- 4.77/8 MHZ TURBO
- 150 WATT POWER SUPPLY
- 360K FLOPPY DRIVE AND CONTROLLER
- MONOGRAPHIC/PRINTER PORT
- SERIAL PARALLEL/GAME PORT
- HIGH RESOLUTION MONITOR
- AT/XT KEYBOARD
- CLOCK/CALENDAR WITH BATTERY BACK-UP

$469.00 10MHZ XT TURBO
~~$499.00~~

COMPLETE AT 10 MHZ 0 WAIT*

- 512K RAM ON 1MB M/B
- 6/10 MHZ 0 WAIT
- 220 WATT POWER SUPPLY
- 1.2MB FLOPPY DRIVE
- 1.2MB/360K F.D. CONTROLLER
- MONOGRAPHIC/PRINTER PORT
- HIGH RESOLUTION MONITOR
- AT/XT 84 KEYS KEYBOARD
- TWO SERIAL PORT (ONE OPTIONAL)

$829.00

386 SYSTEM	1880.00
12 MHz 0 WAIT	959.00

KEYBOARD: ALL AT/XT SWITCHABLE

* 84 KEYS	45.00
* 84 KEYS CLICK FEELING	55.00
* ENHANCED 101 KEYS	65.00
* ENHANCED CLICK FEELING	70.00

MONITOR:
* AMBER/COLOR/EGA ..... $70.00/$250.00/$360.00

POWER SUPPLY:
* 150 W/200 W/220 .... $45.00/$60.00/$75.00

FLOPPY DRIVES

- 3½ 720K/1.44 KB 95.00/125.00
- FUJITSU 360K/1.2 MB 75.00/95.00
- TEAC 360K/1.2 MB 85.00/105.00

1084 SARATOGA-SUNNYVALE RD., SAN JOSE • (408) — 446-3906

Kenfil Announces Top Software Sellers

BUSINESS & PRODUCTIVITY —MS-DOS

Last Month	May	
2	1	WordPerfect
1	2	TurboTax
–	3	SideKick Plus
8	4	Paradox
5	5	FormTool 2.0
6	6	Quattro
7	7	Turbo C
9	8	Dac-Easy Accounting
–	9	RightWriter
12	10	Carbon Copy
4	11	Managing Your Money
–	12	Lucid 3D
15	13	Flow Charting II
–	14	Printmaster Plus
10	15	MathCAD

UTILITIES—MS-DOS

Last Month	May	
1	1	Norton Utilities Advanced
3	2	Direct Access
10	3	Norton Utilities 4.0
4	4	PC Tools
2	5	XTree Professional
6	6	Fastback Plus
–	7	LapLink Plus
5	8	Sideways
8	9	DESQview
7	10	Mace Utilities
14	11	Disk Technician Plus
11	12	Print Q
13	13	Q Dos II
15	14	XTree
9	15	Disk Optimizer

MACINTOSH

Last Month	May	
4	1	Suitcase
–	2	QuicKeys
3	3	Superpaint
1	4	MacinTax
–	5	Beyond Dark Castle
2	6	Mac Money 3.0
–	7	Mindwrite
–	8	Hyper DA
8	9	MacTREE
9	10	Managing Your Money

Source: Kenfil Distribution, Van Nuys, CA. "Kenfil May Bestsellers."

the page where you save... BIG!

CASES ★★★★★★★★★★★★★★★★
XT SLIDE 24.50
AT STYLE XT SLIDE 27.00
AT BABY SLIDE 33.00
REG.SIZE AT/2 DR SLOT 46.50
AT 3 DR SLOT HORIZ LEDs 47.50
TOWER W/DIGITAL DSP/PS... 290.00
TOWER W/200W PS 220.00

POWER SUPPLIES ★★★★★★★★★
150W XT 32.50
185W BABY AT 39.00
200W AT & 386 ..... 51.50

MOTHER BOARDS ★★★★★★★★★
4.77 MHZ REG.XT 53.00
4.77/8mhz Turbo 56.00
4.77/10mhz Turbo XT 61.00
REG. AT 6/12 mhz 305.00
6/10 mhz DTK AT 228.00
BABY AT 6/8/10/12 1 WS 265.00
AT 15 MHZ 0 WS SI@18.7 ..... 425.00
MICRONIC 386 ..... 1333.00
386 W/EGA/SP/PP 1500.00

BARE BONE SYSTEMS★★★★★★★★
FCC XT 8 MHZ 140.00
FCC XT 10 MHZ 149.00
FCC AT 10 MHZ 389.00
AT 6 MHZ 295.00

KEYBOARDS ★★★★★★★★★★★★
5160 84 KEY XT/AT 37.00
UNITEK K151L XT/AT 36.00
84 KEY XT ONLY (K151L) 36.50
101 KEY ENH RT(5161) 40.00
KEYTRONIC 101 KEYBD 44.00
101 KEY ENHANCED 41.00

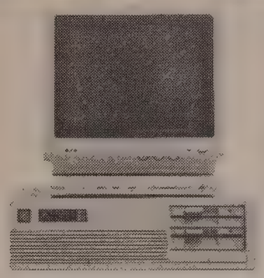
DISPLAY CARDS ★★★★★★★★★★
CGA W/PRINTER PORT 31.00
MGA W/P. PORT (s) 30.00
MGA W/P. PORT (386) 30.00
MCGP 59.00
CGA W/OUT P. PORT 31.00
GENOA 800X600 Lvl 7 ..... 190.00
EGA 640X350 AUTO SW 97.00
EGA 640X350 NON AUTO 95.00
EGA WONDER (ATI) 170.00

EXPANSION CARDS ★★★★★★★★
2.5 Meg RAM CARD FOR AT.... 66.00

I/O CARDS W/CABLES ★★★★★★★
AT I/O PLUS GP/SP/PP 30.00
LONG MULTI I/O XT 35.00
PRINTER CARD XT/AT 9.00
SERIAL CARD XT 13.50
GAME CARD XT/AT 10.00

DISK CONTROLLERS ★★★★★★★
FDC W/CABLE XT 2-DR 12.00
FDC W/CABLE XT 4-DR 20.00
AT/XT FDC 1.2meg & 360 ..... 30.00
WD HD XT 66.00
WD WA2 1003 HD/FD 104.00
TW WA2 HD/FLOP (12MHZ)... 100.00
RA2 HD/FD(For RLL Dr) 125.00
OMTI RLL XT 5527T 63.50
NCL HARD/FLOP.AT 103.00
30M H.D. CTRL(RLL) 64.00

FLOPPY DISK DRIVES ★★★★★★★
MITSUMI 360K 62.00
FUJITSU 360K XT 65.50
FUJITSU 360K AT 66.00
FUJITSU 1.2meg AT 78.00
TEAC 1.2meg AT 83.00
TEAC 720K FDD 78.00
TOSHIBA 3.5"720K FDD 87.00
TOSHIBA 1.44M FDD 98.00



ORDERS SHIPPED OUT WITHIN 24 HOURS.

AT 286 TURBO SYSTEM
(13 times faster than PC/XT)
- 6/12 mhz AT 286 mother board
- 512K on board (expandable to 1M)
- 1.2M Floppy Drive
- 200W Switchable Power Supply
- Reg. size AT slide case (3 LEDs & 3 sw. on panel)
- K151L XT/AT compatible keybd.

~~SUGG. RETAIL $999.00~~
$699.00*

AT BARE BONE KIT
- 200W Switchable Power Supply
- 6/10 mhz Turbo Mother Board
- Reg.size AT Slide Case (3 LEDs & 3 sw on panel)

$339.00

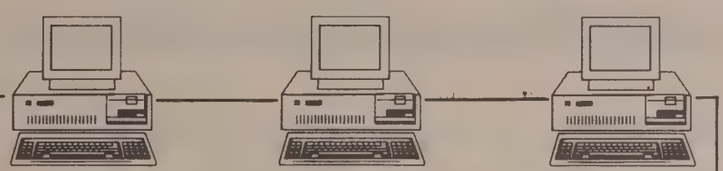
* Subject to change according to current RAM chip prices

XT 20 MEG. HARD DISK SYSTEM
(3.7-4 times faster than PC/XT)
- 4.77/10 mhz mother board
- 640K memory on board
- 20M Hard Drive (ST-225) w/ctrl.
- 1 360K Floppy Disk Drive w/ctrl.
- 150W Switchable Power Supply
- AT Jr. Slide Case (3 LEDs & 3 Sw. on panel)
- K151L XT/AT compatible keybd.

SUGG. RETAIL $849.00
$629.00*

XT BARE BONE KIT
- 150W Switchable Power Supply
- 4.77/8 mhz Turbo Mother Board
- AT Jr. Slide Case for XT (3 LEDs & 3 sw. on panel)

$130.00



NOVELL NETWORK SYSTEM
4 STATIONS + NOVELL NETWARE PACKAGE

Server(non-dedicated):
- 12 Mhz 0 wait AT-286 System with 1 meg ram om board.
- 2.5 meg ram card w/256K on board
- 1.2 meg floppy drive w/controller
- MGA w/printer Port
- Amber monitor w/tilt & swivel base
- SMC Arcnet card
- Passive Hub
- 101 key keyboard w/tactile feel
- Hard disk drive (optional)
- Tape Back-up (optional)

Workstations:
- **AT-286 Workstation w/256K memory (640K option)**
- **1 Floppy Disk Drive w/controller**
- **Monochrome Graphic Card**
- **Flat Face Mono Monitor with T/S base**
- **Keytronic 101 Key Keyboard**
- **SMC ARCNET Card**

Network Software:
NOVELL ELS NetWare 286 Level 1

$3950.00

SUGG. RETAIL:$9800.00

DEALERS ONLY

★ ALL PRICES ARE FOR QUANTITIES OF 10 PLUS

New Business Hours:
M-F 7 AM - 5 PM PST
Sat. 9 AM - 3 PM PST

HARD DRIVES ★★★★★★★★★★
SEAGATE ST225/CTRL 259.00
ST-225 W/O CTRL 205.00
MINISCRIBE 20M/CTRL 244.00
FUJI FK309-26 20M HD 214.00
FUJI FK309-39R 30M 228.00
SEAGATE ST-251 40M HD 376.00
SEAGATE ST238/CTRL 264.00
ST-4051 AT 39ms 510.00
ST-4053 AT 28ms(FH) 529.00
ST-4096 AT 28ms 729.00
TEAC 40meg 370.00
TANDON 85M HD 759.00

MODEMS ★★★★★★★★★★★★★★
ANCHOR PATRIOT 1200 ..... 64.50
USR 2400 MICROLINK 138.00
PATRIOT EXT 2400 Bd 167.00

PRINTERS ★★★★★★★★★★★★
CITIZEN 120D 142.00
CITIZEN 180D 163.00
PANASONIC KX-P1080iM2 .... 169.00
PANASONIC KX-P1091iM2 .... 193.00
HP LASER SERIES II 1673.00
HP SCANNER JET 1559.00
2MB HP RAM CARD 737.00

MONITORS ★★★★★★★★★★★★
PACKARD BELL AMBER T/S ... 67.00
SAMSUNG AMBR 1252G T/S ... 68.00
SAMSUNG AMBR FLAT 12SF ... 78.50
SAMSUNG RGB 1464W T/S ... 216.00
SAMSUNG RGB 1465 T/S 224.00
SAMSUNG EGA 1453M1 T/S ... 350.00
S'SUNG(Intec)1453M EGA 344.00
CTX 2422 EGA 349.00
NEC MULTISYNC II 584.00
M'SUBISHI M/SYNC 1371A ... 479.00
MITSUBA FLAT 710A 116.00

TAPE BACKUPS ★★★★★★★★★★
ARCHIVE 40m 5240 XT 345.00
ARCHIVE 40m 5540 AT 355.00
ARCHIVE 40m XE3240 XT 464.00
ARCHIVE 40m XE 3540 AT 469.00
ARCHIVE 60m INTERNAL 480.00

MICE ★★★★★★★★★★★★★★★★
LOGITECH 67.00
GENIUS 36.50

CABLES & SWITCH BOXES ★★★★
AB DATA SWITCH 17.90
6'PRINTER CABLE 5.00
18'PRINTER CABLE 12.00
KEYBOARD EXTEN CABLE 3.25
MONITOR EXTEN CABLE 4.20
WA2 CABLE 3.55
SERIAL CBL 10IN-25OUT 3.00
SERIAL CBL 10IN-9OUT 3.00
SERIAL CBL (Multi I/O) 3.50

SOFTWARE ★★★★★★★★★★★★★
PC SOFTWARE (DOS) 77.00
PC TECHNICIAN ..... CALL
ELS NETWARE 286 Level 1 ... 365.00
NOVELL ADV 286 W/KCD ... 1315.00
COPYII PC W/OPTION BD 87.50

OTHERS ★★★★★★★★★★★★★★★
U P S ..... CALL
SYSTEM STAND 9.50
ACTIVE HUB(RT-8702 ..... 282.00
PASSIVE HUB(USA) 40.00
PASSIVE HUB(Generic) 26.00
JOYSTICK (FOR IBM PC) 13.50
DISKETTE 00.45
IC KIT FOR 2nd SER.PORT/AT ... 11.00
IC KIT FOR 2nd. SER.PORT/XT ... 7.00

- Shipping charges extra.
- 1 year limited warranty.
- $100 minimum order.

WELLWAY INT'L. CORP.

1633 W. Washington Blvd., Dept. MT-688, Montebello, CA 90640
Tel.:(213)722-5511 • Fax:(213)722-5856

- Prices & availability subject to change without notice.
- Credit card sales + 3%,$200 min.

Personal Computing:
The Industry That Takes Itself Too Seriously

To be involved in the personal computer industry these days is, seemingly, to embroil oneself in an endless series of arguments, lawsuits, and religious wars. The simple creation and selling of useful product falls by the wayside as competing companies, each wrapped in the mantle of invincible self-righteousness, accuse each other of heinous crimes against business ethics, copyright law, Mom and apple pie. Our own Mike Markowitz delivers his assessment of Apple's look and feel lawsuit in the context of this industry-wide epidemic of self-congratulation and selective blind spots. He also comments, in a separate letter, about John Dvorak's column "Mac and the Businessman," itself an attempt to deflate a few pretensions, and shows in the process that it's also possible to take Dvorak too seriously.

— eds.

The Tao Of Litigation

By Mike Markowitz

Law, say the gardeners, is the Sun
Law is the one
All gardeners obey
Tomorrow, yesterday, today

The great English poet, Wystan Hugh Auden, wrote that, a long time ago. I'm allowed to quote it here, because I'm making a rhetorical point, in the context of a literary critical work. Under our wise and just copyright laws, that is considered "fair use." Maybe you can find a lawyer and pay him/her to argue the contrary.

The press releases from Apple are on stationery emblazoned with the Apple logo, a registered trademark, real small, in the top left corner. The biography of Steve Jobs says he insisted that the six bands of color across the bitten apple should be adjacent. It would have been a lot easier to print if you left a little white space between the color bands, but Jobs was a perfectionist. The Buddha is in the details.

Today's press release says "APPLE COMPUTER FILES LAWSUIT TO PROTECT MACINTOSH AUDIO VISUAL DISPLAY." I'm allowed to quote that, verbatim, because it's a press release. (But I should probably mention that "Verbatim" is a registered trademark of Verbatim Corp., which makes very fine floppy disks.)

Apple has filed suit in U.S. District Court in San Jose against Microsoft Inc. of Redmond, Washington and Hewlett-Packard, Inc. of Palo Alto, California. Apple's lawyers say that Microsoft *Windows 2.03* and HP's *New Wave* (a shell that runs under *Windows*) infringe upon Apple's unique, highly popular and copyrighted "audio visual computer display."

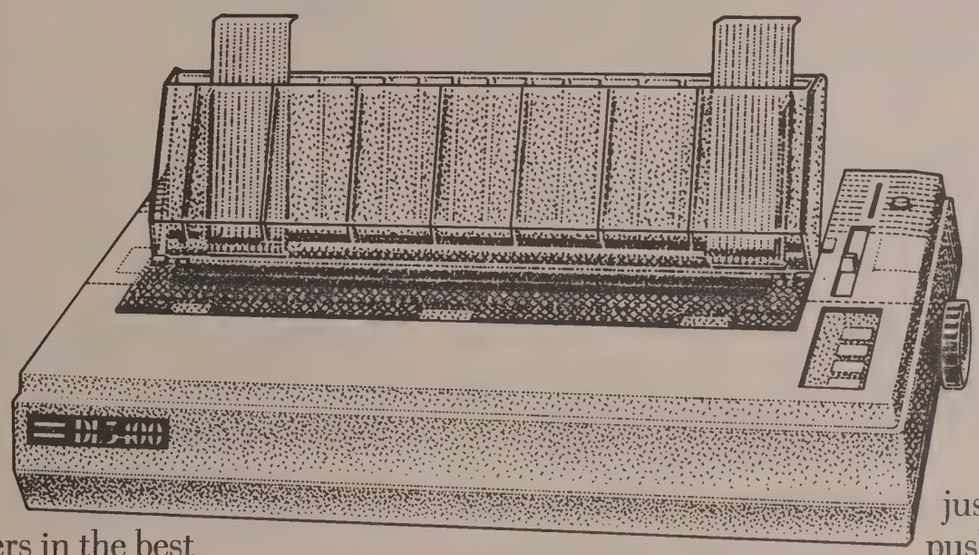
> *We should not lose sight of the reality that Apple is a corporation. It is not a messianic church, not a millenarian political movement, not the agency of cultural renaissance, not machinery of Love and Truth. A corporation exists only to make money for its stockholders, not to remake the world, any rhetoric notwithstanding.*
>
> *— Mike Markowitz*

Audio visual? AUDIO visual??!! Does it talk? Can it sing? If you infringe it, does it not cry out for vengeance? Is this some kind of Zen koan? What is the sound of one hand mousing?

Get this: "Apple's lawsuit maintains that the visual screen displays generated by *Windows 2.03* are themselves illegal copies of the Macintosh audio visual works and exceed the limited license rights Apple previously granted to Microsoft." Translation: as long as *Windows* was lame, it was OK with us, but when it started getting good, it trampled on our turf. Microsoft publishes three of the best selling Macintosh applications: *MS Works, MS Word* and *Excel*. But anything they publish for PCs is supposed to look and feel crummy, as far as Apple is concerned, I guess. Hewlett-Packard is a supplier of computers and instruments to business, medicine and science. Wozniak worked there once. Bringing a lawsuit against H-P is like kicking a big, old, good-natured shaggy pet.

Delbert Yocam, Apple Chief Operating Officer, spake thus: "It is critically important to the entire industry

Mini Micro Supply, the best place to look for Fujitsu printers.



You'll find Fujitsu printers in the best companies around the world. You'll also find them right here, at Mini Micro Supply.

We sell Fujitsu printers because they're built with world-famous quality and reliability. For example, take a look at Fujitsu's DL3400 24-wire dot-matrix printer pictured here.

First, the DL3400 printer prints at 288 characters per second with crisp graphics and exceptional letter quality.

Next, its special tractor lets you switch between letterhead and computer paper just by pushing a few buttons. Giving you fast and smooth operation.

So when you're looking for quality and reliability in a printer, contact Mini Micro Supply Co., Inc., 2050 Ringwood Ave., San Jose, CA 95131 (408) 434-6859. We're the best place to look for the first name in printers.

Mini Micro Supply is also a large volume distributor for Fujitsu's floppy disc drives: the 360K-M2551A and 1.2MB-M2553K.

FUJITSU

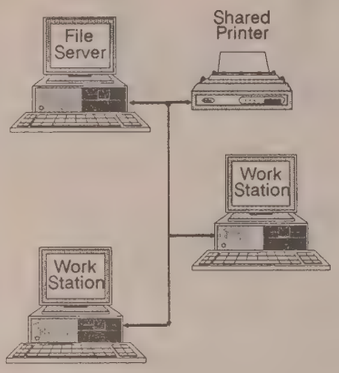
FUJITSU AMERICA
Computer Products Group

Mini Micro Supply
The Reseller's Resource.

Dealers only

LOCAL AREA NETWORKS

Featuring : NOVELL Advanced Netware and ITT XTRA Business Systems Computers

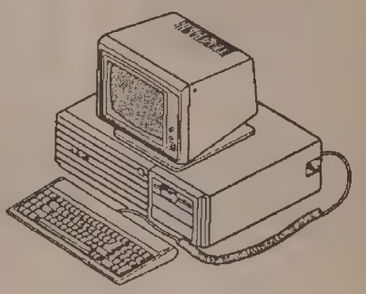


We Provide a Full Range of Services

- Complete LAN Packages
- Complete Hardware Solutions
- Full On-site Installation and Training
- Pre-purchase site evaluation
- Systems Consulting, as needed
- Remote Support Services

Our Areas of Specialty Include

- Non-profit Organizations
- Medical Organizations
- Professional Corporations
- Law Offices



Introducing.....

800 MB Optical WORM Disk Backup SubSystems

- 800 MB Maxtor Optical Disk
- True Archival Backup Capability
- Direct Access to Backup Files
- 10 Year Media Life
- More Reliable than Tape Backup

Fully Network Ready

$3,495

June Special !

Large Capacity Hard Disk SubSystems

- Usable Drive Capacities To 267 MB
- Access Times As Fast As 16 Msec.
- Maxtor, CDC and Miniscribe Disk Drives
- Fully Compsurfed - Installation Included

160 MB ESDI Subsystem $2,495
267 MB ESDI Subsystem $3,995

Available Now For Adv. Netware 2.0a

Novell Netware

Entry Level Netware	$595
Adv. Netware/286	$2,195
Adv. Netware Ver 2.1	$2,695
SFT/286 Ver 2.1	$4,295
Disk Coprocessor	$500

Onsite Installation Included

File Servers

ITT PS 400 Server • 10 Mhz 80286, 1M RAM • 1.2 MB Floppy, Monitor	$2,195
ITT PS 700 Server • 16 MHz 80386, 1 M RAM • 1.2 MB Floppy, Monitor	$3,995
Racore 386 Server • 16 MHz 80386, 1 M RAM • 1.2 MB Floppy, Monitor	$3,595

Disk Subsystems

40 MB	28 msec	$550
70 MB	28 msec	$1,095
104 MB	28 msec	$1,695
160 MB	16 msec	$2,895
274 MB	25 msec	$4,295

Formatted Disk Capacities

Work Stations

ITT PS 300 Station • 10 Mhz 8088, 768K RAM • 760K Floppy, Monitor	$1,135
ITT PS 400 Station • 10 Mhz 80286, 1M RAM • 1.2 MB Floppy, Monitor	$1,895
ITT PS 700 Station • 16 Mhz 80386, 1M RAM • 1.2 MB Floppy, Monitor	$3,895

Novell Network Interfaces Supported: .....Ethernet, ARCNET, Token-Ring, StarLan, Lanpac II, X.25 Remote Bridge

Precision Software Products

833 Market St. Suite 506
San Francisco, CA 94103

(415) 896-5464

P.S. We sell single user systems too!! ... The Management.

that innovation be protected from illegal copiers with the full force of the law." Illegal copiers? Can you say "Xerox?"

There is a Vietnamese proverb: "When the elephants fight, it is the grass that suffers." Or, to paraphrase the Tao Te Ching, "Apple and Microsoft are not kind; they treat the users like straw dogs."

Mainz, Germany, September, 1454. Johann Gutenberg is working late in his print shop. There is an ominous knock at the door. It's Delbert Yocam and six mean-looking Benedictine monks.

"So, Herr Gutenberg, what's all this?"

"That is a press, and these boxes here are downloadable fonts; I call them 'moveable type' . . ."

"And you're going to produce Bibles, no? Two columns of text, forty-two lines on each page? Big red initial letters for every chapter?"

"To start, of course, but after that, who knows?"

"Herr Gutenberg, this is a Papal injunction. You are hereby forbidden, on pain of excommunication, from issuing any audio visual display that infringes on the manuscripts our monks have been copying for the past four hundred years. The Church does not intend to restrict the usage of ideas, but merely their specific expression."

So it goes. No Renaissance. No Reformation, No First Folio or *Principia Mathematica*. No *Less Than Zero*, copyright 1985 by Brett Easton Ellis . . .

You understand, dear reader, that there is a natural progression in the life of corporations. They start out being run by visionaries and engineers. They wind up being run by lawyers and accountants. It's all a game. We hit them. They hit us. It keeps the legions of corporate attorneys gainfully occupied and out of mischief. A lawyer without a lawsuit is like a dog without a bone, a general without a war, a hooker without a trick.

What do you suppose the ratio of lawyers to engineers is in Japan? Does Sony sue Hitachi? Does Mitsubishi sue Toshiba? The Way of the Samurai knows no preliminary injunctions. Dearest Apple, I have written you this haiku:

On the little screen,
Electrons dance, photons leap
All copyrighted.

In another generation, when the only jobs for Americans will be pouring green tea for our Japanese masters, and servicing their robots, we will look back on the legendary, titanic court battles of the '80s and '90s, when Apple really stuck it to Microsoft, and HP, too.

This week, when you set out the garbage, be careful not to put the trash can in the lower right hand corner of the driveway. That copyrighted audio visual display belongs to Apple Computer, Inc. □

To the Editor:

I know that even a writer can have a bad day, but I was dismayed by John Dvorak's column, "Mac and the Businessman" (*MicroTimes*, April). What journalistic purpose can possibly be served by such a sustained and bitter outburst of hate against Apple Computer, Inc.?

As someone who has often expressed harsh words in print about Apple, I understand some of Dvorak's feelings. This is a company whose products, style and history mean a lot to us, and we see it taking a path that has no heart. Nevertheless, we should not lose sight of the similar reality that Apple is a corporation. It is not a messianic church, not a millenarian political movement, not the agency of cultural renaissance, not the machinery of Love and Truth. A corporation exists only to make money for its stockholders, not to remake the world, any rhetoric notwithstanding.

To denounce a silly marketing strategy as a "Nazi goose step into the hallowed halls of grey American corporations" is to take it too seriously. There are no crematoria under the Cray in Cupertino (say that fast five times...). And Apple doesn't make weapons of mass destruction, which is more than you can say for a lot of its corporate competitors, nicht wahr?

To be sure, Apple takes itself too seriously. Any company that can take gray plastic and call it "platinum" (when it resembles that lovely metal about as much as I resemble Robert Redford) has a problem with reality-testing. General Motors also takes itself too seriously, but I would not write something about GM as hateful as Dvorak's column, even if a defective Chevy ran over my mother.

Most people lead lives of quiet desperation. Most people of our sort work in offices shuffling silly bits of paper, and pretending to be busy and important. This is not Apple's fault. I don't hold John Sculley personally responsible for all the stupidities of monopoly capitalism. I'm glad he got out of selling sugared water to kids. I just wish he'd sell me a cheap laptop computer that's insanely great.

Dare to struggle, dare to win.

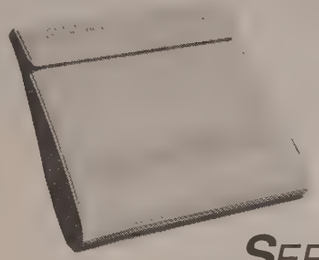
— *Mike Markowitz*

Dvorak replies:

First off, I doubt your sincerity when you say you wouldn't bitterly complain about GM if a defective Chevy ran over your Mom. I mean, really?

So let's go from there. Let's just say that my outburst stemmed from a sincere concern, not from animosity. To be honest about it, I'm one of Apple's biggest boosters. No kidding! — *jcd*

Want to save Time, Money, & Headaches?



GET SUPERSOFT's SERVICE DIAGNOSTICS

All the software, alignment diskettes, parallel/serial wrap-around plugs, ROM POSTs and extensive, professional documentation to provide the most comprehensive testing available for IBM PCs, XTs, ATs and *all compatibles* under DOS or Stand Alone. No other diagnostics offers such in-depth testing on as many different types of equipment by isolating problems to the board and chip level.

NEW: SuperSoft's **ROM POST** performs the most advanced **Power-on-Self-Test** available for system boards that are compatible with the IBM ROM BIOS. It works even in circumstances when the Service Diagnostics diskette cannot be loaded.

NEW: 386 diagnostics for hybrids and **PS/2s!**

For over nine years, major manufacturers have been relying on SuperSoft's diagnostics software to help them and their customers repair microcomputers. End users have been relying on SuperSoft's Diagnostics II for the most thorough hardware error isolation available. Now versions of Service Diagnostics are available to save everyone (including every serious repair technician) time, money, and headaches in fixing their computers, even non-IBM equipment.

All CPUs & Numeric Co-processors
System Expansion & Extended Memory
Parallel & Serial Ports
Mono, CGA, Hercules & EGA Adapters
All Keyboards & the 8042 Controller
All Color Graphics & Monochrome Monitors
Floppy, Fixed & Non-standard Disk Drives
Standard & Non-standard Printers
System Board: DMA, Timers, Interrupt, Real-time Clock & CMOS config. RAM

Join the ranks of XEROX, NCR, CDC, SONY, PRIME, ... who have bundled SuperSoft's diagnostics with their microcomputers at no risk because of our 30 day money back guarantee.

Service Diagnostics for PC, PC/XT, and compatibles only	$169
Alignment Diskette for PC, PC/XT and compatibles (48 tpi drives)	$ 50
Wrap-around Plug for PC, PC/XT and compatibles (parallel and serial)	$ 30
Service Diagnostics for AT and compatibles only	$169
Alignment Diskette for AT and compatibles (96 tpi drives)	$ 50
Wrap-around Plug for AT (serial)	$ 15
ROM POST for PC, PC/XT, and compatibles only	$245
ROM POST for AT and compatibles only	$245
Service Diagnostics: The KIT (includes all of the above—save $502)	**$495**
Service Diagnostics for all other CPUs (386, V20, V30, Harris, etc.)	$195
Diagnostics II is the solution to the service problems of users of all CP/M-80, CP/M-86 and MS-DOS computers	$125
ROM POST for PS/2 and compatibles only	$245
Alignment Diskette for PS/2 and compatibles (3.5 inch)	$ 50

To order, call 800-678-3600 or 217-359-2112, FAX 217-398-5923, or write Supersoft

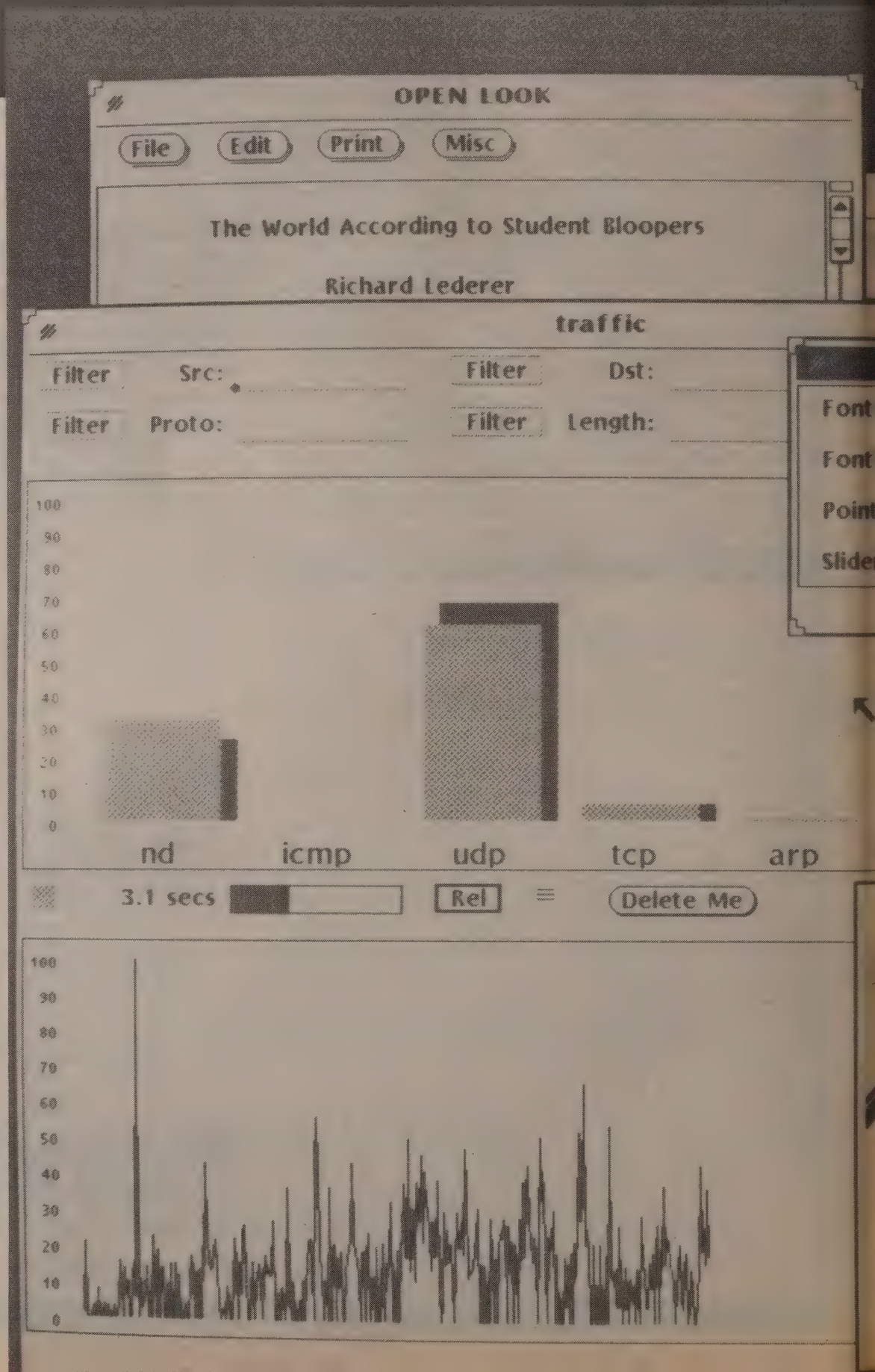
your microcomputer repair solution

SuperSoft

FIRST IN SOFTWARE TECHNOLOGY P.O.Box 1628 Champaign, IL 61820 (217) 359-2112 Telex 270365

SUPERSOFT is a registered trademark of SuperSoft, Inc., CDC of Control Data Corp., IBM PC, AT & XT of International Business Machines Corp., MS-DOS of MicroSoft Corp.; NEC of NEC Information Systems, Inc., PRIME of PRIME INC ; Sony of Sony Corp

AT&T OPENS



By Mary Eisenhart

When microcomputers based on Intel's 80386 microprocessor started shipping a year and a half ago, AT&T's UNIX operating system, long a mainstay of corporate, government, academic, technical and industrial environments, suddenly took on a new viability in the micro world. MS-DOS failed to take advantage of the 386's 32-bit architecture, and UNIX offered that power, as well as true multiuser-multitasking functionality.

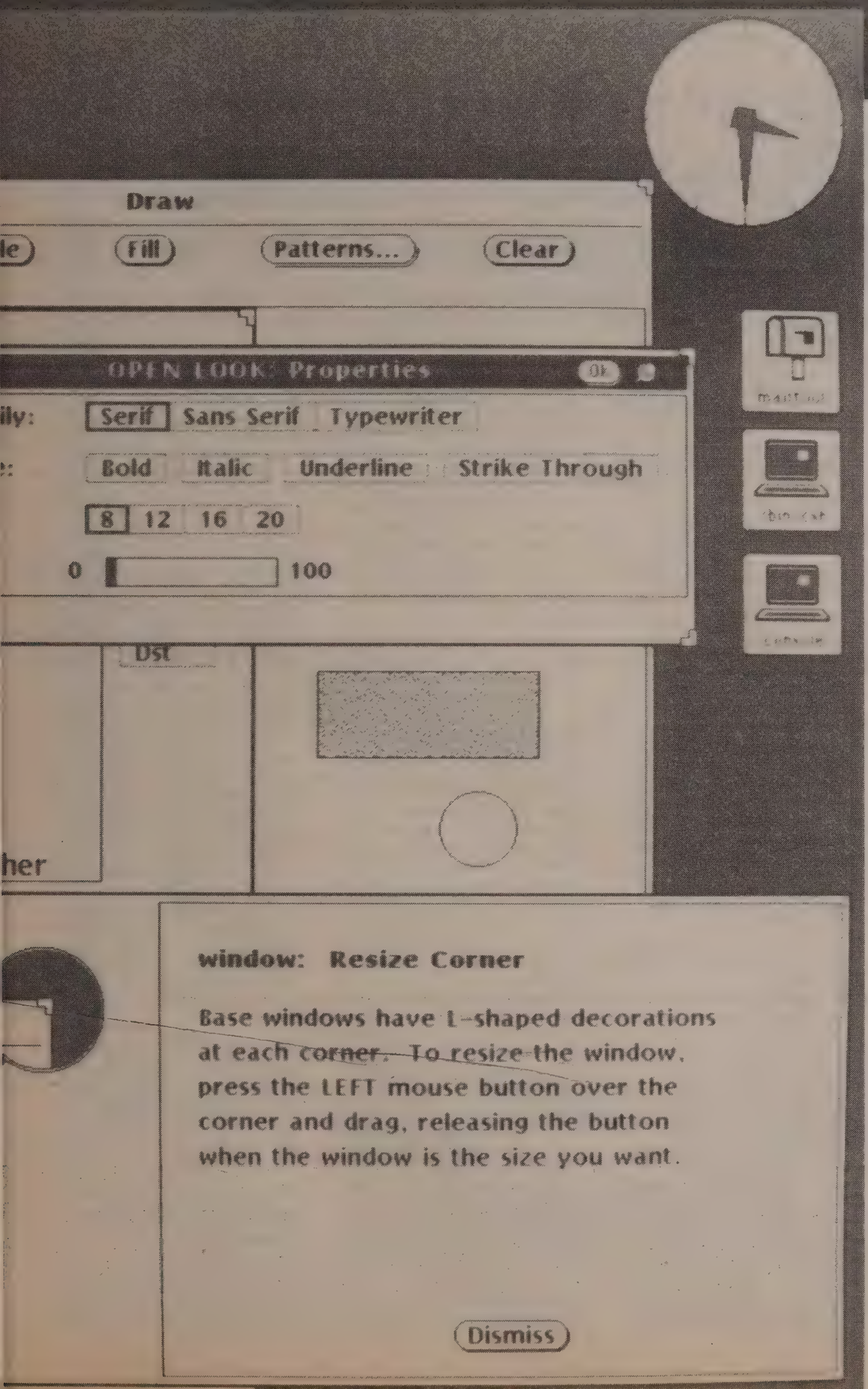
Created long ago in AT&T's Bell Laboratories, UNIX has always been known for its portability across machine lines, as well as its power. However, it's also been something of a byword for user hostility — it was written by programmers for programmers, and the software engineer's dream is often the naive user's nightmare.

On April 11 AT&T, in conjunction with Sun Microsystems, announced Open Look, its new graphical interface for systems running UNIX System V. It's positioning Open Look as an industry standard, and has garnered impressive endorsements from hardware and software vendors, including an unprecedented number from those whose strength is in the relatively massive PC marketplace.

Open Look features windowing technology licensed by Sun (of which AT&T now owns a 20% share, and which is involved with AT&T in creating a new industry-wide UNIX standard) from Xerox (whose technology was used by Apple in creating the Macintosh). Although the interface is not yet in final form, the version shown features elements at once familiar to the Macintosh user — windows, icons, dialog boxes, scroll bars, mouse support — but at the same time clearly distinctive. According to AT&T, the Open Look interface will provide a common look and feel across the UNIX system, using either MIT's X Windows or Sun's X11/NeWS environment. It will also allow the running of MS-DOS applications (and, eventually, OS/2 applications) as tasks in their own windows, using AT&T or third party add-on products.

AT&T expects the first Open Look

THE WINDOWS



product — a window manager for its own 6386 workstation, to be available this summer. The XT developer's toolkit, based on the X Windows standard, and the NDE toolkit, based on NeWS, will ship in the fourth quarter of 1988 and the first quarter of 1989 respectively.

What Does This Mean?

The announcement of Open Look is an aggressive attempt by AT&T to capture some of the market currently sought by Apple with A/UX, and Microsoft/IBM with OS/2 — power-hungry workstations and networked environments in corporate, technical and government settings.

Since the advent of 32-bit microcomputers, notably the various 386 machines and the Motorola 68020-based Macintosh II, there's been a headlong rush in the industry to secure the Holy Grail of interfaces: something that's easily accessible to the inexperienced user, which tends to mean mice, icons, and windows rather than a text-based system, and true multiuser-multitasking power and productivity, which tends to mean something like UNIX. As things currently stand, all the key players hold significant portions of a total solution, and promise the rest Real Soon Now.

In one corner there's Apple and the Mac II. On the one hand, Apple has a significant edge in the Macintosh interface, which is justly renowned for ease of use and consistent implementation across applications. It's stable, debugged, and beloved by millions of users. On the other hand, Apple's only recently begun shipping developer kits for A/UX, its own version of UNIX (licensed, naturally, from AT&T, an example of the convoluted alliances and rivalries characteristic of this arena), the preliminary version of the operating system is far from Macish, and real applications (along with the capability to run Mac applications concurrently under A/UX) are nowhere near the horizon.

In yet another corner there's Microsoft, which has raised strategic multitasking to a fine art. Microsoft

As shown during the announcement, the Open Look interface has both similiarities to and striking differences from the Macintosh interface.

AT&T's John Boyd: "Whereas we have a lot of minicomputer multiuser, multitasking, really sophisticated applications software for UNIX boxes, the simple single-user high volume sales applications haven't been ported to UNIX."

is working with IBM to create OS/2, a multiuser-multitasking operating system for IBM's PS/2 line and such PS/2 clones as appear. Its interface is also graphical, based on Microsoft's *Windows* and the Presentation Manager, versions of which are available currently in *Windows 386* and 2.03. However, OS/2-based applications are still essentially vaporware, and the operating system itself seems to be getting less than universal acceptance among business clients who can't justify its operating costs (chiefly in terms of increased memory requirements).

The status of OS/2 and the Presentation Manager is somewhat equivocal, meanwhile, because Apple has recently sued Microsoft and Hewlett-Packard (whose *New Wave* product is based on *Windows*) for copyright infringement in Windows. No one's quite sure about the ultimate effect of this look-and-feel suit on the future of OS/2, but it's unlikely to be beneficial in the short term, as developers already concerned about a smallish user base confront the new problem of whether they'll be able to market *Windows*-based products at all.

Microsoft, meanwhile, has its own version of UNIX, *also* licensed from AT&T, called XENIX. XENIX is marketed and supported by the Santa Cruz Operation, which has, for years, successfully developed, sold, and supported sophisticated workalikes to popular DOS applications operating in a PC-based UNIX environment. The advent of the Compaq 386 and its descendants has been a boon to SCO in that XENIX is a thoroughly established standard which fully utilizes the machine's power.

XENIX, however, does not have a standard graphical interface, and could be adversely affected by an AT&T UNIX offering which combined an industry-standard interface with the ability to run DOS/OS/2 applications. SCO vice president Doug Michels issued a cautious statement of endorsement for Open Look: "We have reviewed the Open Look User Interface and agree that a common user interface for UNIX System-based platforms is important for computing in the 1990s. We will work with AT&T to further evaluate the Open Look User Interface for use in our products, and to suggest enhancements and extensions as appropriate for SCO's market."

In entering this quest for the ultimate operating system merged with the ultimate user interface, AT&T enjoys several strategic advantages. When it announced its partnership with Sun in creating a new industry-wide UNIX standard (see "The Guru And The Tramp," *MicroTimes*, April 1988), many of its UNIX licensees expressed concern at AT&T's probable ability to enforce industry-wide conformity to the new standard, and the announcement of Open Look enhances that ability. And again, AT&T offers the power of UNIX today. For Open Look, again, it's going to be at least a short wait.

Also, promising numbers of developers of significant existing DOS-based applications have endorsed Open Look as a platform. Lotus Development's president Jim Manzi commented: "Lotus' goal is to provide its customers with common applications such as *1-2-3* across standard platforms. Until recently, the variants of the UNIX System were a barrier to that goal. The Open Look User Interface exemplifies a movement toward a more standardized UNIX System environment. This movement has encouraged vendors like Lotus to develop UNIX System versions of proven applications such as *1-2-3*." Ashton-Tate CEO Ed Esber remarked: "The Open Look User Interface will play an important role in helping us provide our customers with powerful, yet easy-to-use UNIX System V applications. By joining forces, AT&T and Sun Microsystems have created an interface that truly makes UNIX System V a viable competitor to OS/2 and the Macintosh in the operating systems arena." (Autodesk, Borland, Symantec, Software Publishing, and WordPerfect also issued endorsements.)

To put these developments in perspective, we talked to John Boyd, sales and marketing vice president of AT&T's Data Systems Division.

How does the Open Look interface differ from the Mac interface or Windows?

Well, it's probably premature to speak to the specific appearance of the product. What we've announced is a developmental effort and the intention to release a product. We haven't yet released the product. At this juncture what we're doing is addressing a concern that has been levied against UNIX in the past.

Whereas everyone who is computer literate, especially those who are computer proficient, has often acclaimed the functionality and power of UNIX as an operating system, where it has not done as well is in common office environment desktop acceptance. And one of the reasons for it is that it hasn't had a very easy-to-use interface between the system and the end user. And so that's the importance of Open Look.

What that says is that with the license of the technology that has been developed by Xerox, at PARC, we will now be delivering to end users an interface that enables them to get access to the enormous power and leverage that comes from the UNIX operating system.

What technology are you licensing from Xerox?

I personally am not equipped to tell you that. I *can* give you a little background on PARC.

PARC is the Palo Alto Research Center. Xerox may not like this, but I tend to think of PARC as analogous to their Bell Laboratories. It was a real pure research center, and they turned loose a lot of very creative, capable engineers and scientists. They made a number of significant breakthroughs in desktop computing, back in the '70s, that are the basis for a lot of the technology that is used today, and is openly acknowledged as the technology that is largely responsible for the acceptance of the Apple Macintosh computer. My belief is that Apple readily acknowledges that contribution of PARC.

I have certainly always used that as a reference point, one of the very key developments in bringing desktop computing power to the typical end user, and that was that scientific breakthrough at PARC. Now the Xerox people in turn never really fully deployed that technology in their own product line.

A lot of developers from a variety of environments have issued statements in support of the Open Look effort. Some of them, such as Ashton-Tate, are not players in the UNIX world at this point. What does this mean?

What this really means — we have had, for a number of years, an ample supply of applications software written under UNIX. What we haven't

AMERICA'S #1 SOFTWARE DEALER
PROGRAM DISCOUNT CENTER

LEADING EDGE MODEL "D"®

Your Choice:
1 Drive
2 Drives
20/30 MB HD

LEADING EDGE® AUTHORIZED DEALER

Model "D" comes complete with:

- High-resolution monochrome monitor
- Selectric®-style keyboard
- 8088-2 Microprocessor (4.77 MHz and 7.16 MHz)
- 512K RAM expandable to 768K on the motherboard
- Open socket for 8087 co-processor
- At least three full-size IBM®-compatible expansion slots
- Serial and parallel ports
- Color Graphics and Hercules™ Monochrome Graphics Emulation
- MS-DOS® and GW BASIC®

Leading Edge and logo and Model "D" are registered trademarks, and Infinite Memory System, Infinite Memory Drive and Infinite Memory Cartridge are trademarks of Leading Edge Products, Inc. Bernou Ili Technology is a trademark of Iomega, Inc. Hercules is a trademark of Hercules Computer Technology, Inc. IBM and Selectric are registered trademarks of International Business Machines Corp. MS-DOS and GW Basic are registered trademarks of Microsoft Corp.

CALL FOR BEST PRICE

AST PREMIUM/286

#1 RATED AT
"EDITOR'S CHOICE P.C. MAGAZINE"
50% faster than 8 MHz IBM PC AT. 10 MHz, 0 Wait
100% Compatible

AST RESEARCH INC.

IN STOCK NOW

Authorized Retail Dealer
CALL FOR BEST PRICE

WordPerfect 4.2
with **FREE** Upgrade
to 5.0
$235
WordPerfect 5.0
$299

YOUR CHOICE
3½ ⇦ ⇨ 5¼
NO PROBLEM!

Quattro
$145
Sidekick Plus
$124
Logitech Bus or
Serial Mouse
$79.95
While Supplies Last!
Labels Unlimited
$34.95

Complete PC
Hand Scanner
List **$249**
Special **$199**
While Supplies Last!
Calendar Creator Plus
Quick Schedule Plus
& Other Power Up Products
$34.99

• GEM Desktop Publisher and the complete GEM line make your IBM PC emulate the Macintosh • We have the complete GEOS line **IN STOCK** for Commodore • Apple, Macintosh, IBM and Commodore software in stock. Call for your needs now!

Apple and Macintosh are trademarks of Apple Computer, Inc. IBM is a trademark of International Business Machines, Inc.

PRICES SUBJECT TO CHANGE.

Software City®

1500 Monument Blvd.
Concord, CA 94520
(415) 676-6662
Mon-Sat 10 AM-6 PM

OVER 100 STORES NATIONWIDE
2 STORES SERVING YOU LOCALLY

CORPORATE ORDERS PLEASE CALL (415) 676-2516

155 Main Street
San Francisco, CA 94105
(415) 543-0543
Mon-Fri 9 AM-5:30 PM
Sat 10 AM-4 PM

had however, is that application software that was written under MS-DOS or PC-DOS, and that has become enormously popular with the typical end user, such as *Lotus 1-2-3*. So whereas we have a lot of minicomputer multiuser, multitasking, really sophisticated applications software for UNIX boxes, the simple single-user high volume sales applications haven't been ported to UNIX.

Well, it's often been said that UNIX is of no use to a single user. Is that still true?

It's my belief that's never been true. I think what's intended by that comment is that, because it lacks this easy-to-use user interface, it made it difficult, very difficult, for an end user to get access to all power features and benefits of UNIX.

But now I believe what your leading software people are saying is with an Open Look interface that accomplishes what they've been looking for for some time now, they are ready to make the investment in porting their software to UNIX, because now it has a feature that it has lacked in the past.

In the personal computer and workstation environment, what machines do you expect the Open Look interface to run on, initially?

Well, certainly it's intended for the AT&T 6386 workgroup system. So that would be the most natural. Then it would be a common interface that we would employ in all of our UNIX-based machines. I'm not sure we've released the exact schedule on which machines will be available first, but from the standpoint of the end user the most significant would be our 6386 workgroup system.

Where do you stand in regard to companies like IBM and Apple, as far as supporting their hardware goes? Do you welcome them as collaborators, or regard them as hostile competitors?

Well, (laughs) probably a little bit of both. We license UNIX to both IBM and Apple. So to that extent we are collaborators within the industry infrastructure. But then, of course, we are marketing and selling our own unique deployment of that technology, and to that extent of course we compete.

Now in the case of Apple, they have their graphic user interface for which they've become famous, on the Macintosh, again, which relied heavily on the Xerox technology. Microsoft, in turn, is developing their version of that, which they call the Presentation Manager, which they're doing with the collaboration of IBM. So Open Look is another alternative, but the Open Look user interface is for the UNIX environment.

AT&T's 6386 workgroup workstations will be the first platform for the Open Look interface, with a window manager due this summer.

From a user standpoint, what would be the advantages of going with an Open Look architecture rather than with the Mac II or OS/2?

I think the real differentiation will probably be interesting, and maybe even important, between the user interfaces. More than likely, users, when they select user interfaces, will be doing that more on the basis of personal preferences — the appearance of the graphics, the feel of the mouse, or whatever it is, is personally suitable to them.

The real decision, however, is not so much a decision between Presentation Manager and Open Look, as it is a decision between OS/2 and UNIX. Or DOS and UNIX. And the basis for that decision is that with UNIX you have available to you today the capabilities that are predicted for future versions of OS/2. OS/2 double extended, if you will. The best example of that is the multitasking multiuser capabilities of UNIX today. Then with our Simultask product — normally with UNIX you can run a number of UNIX applications simultaneously because it has a multitasking capability. With our Simultask product, which is available now, you can not only run UNIX applications simultaneously, but you can combine UNIX applications with MS-DOS applications. So effectively you're able to run multiple UNIX and DOS applications simultaneously on the same machine. You can do that today with AT&T 6386 workgroup system.

What kind of programs do you have in place for developers who want to use this as a platform?

Well, we are first of all running seminars for developers and software vendors to enable them to have all the tools and the training they need to move their software to our system. Particularly on Open Look — we have announced several seminars specifically tailored to Open Look.

What sort of applications are you particularly interested in?

Well, at this juncture what we're most interested in — we pretty much have a wide, robust range of applicatons in UNIX today. We've got all the spreadsheets, word processors, and quite frankly, most of the vertical applications.

Most of the important vertical applications are written in UNIX today. Because most of the multiuser systems which support vertical applications tend to be UNIX systems, whether they're from AT&T or Altos or NCR. That's really where your Value Added Resellers are operating primarily today, in UNIX systems, and DEC/VMS. We have a very, very wide range of UNIX applications.

What we're most interested in, with this, is getting the very popular, already-existing horizontal kinds of applications that are written in DOS, and also those DOS applications that are vertical applications, that are written for the small professional offices, and things like that, to be able to bring them over now.

Any specific ones you have in mind?

No.

What about Macintosh applications?

Again, we're not targeting anything specifically that's written in Macintosh. There is nothing that I'm aware of that is written for a Macintosh, that is not today available in an MS-DOS version, and that we're desperately interested in.

Do you expect this to be a serious competitor to publishing applications currently existing in the Mac and DOS world? Sun has a pretty good presence in that area.

Well, first of all, publishing really comes out of the software. When you take your publishing software, whether it's *PageMaker* or whatever, and if you're able to run that on a 386 microprocessor, like our 6386, combine that with the power of UNIX, and you have a formidable desktop publishing platform. Add to that the kind of interface that those who are in the creative publications end of the business require, and which Open Look will satisfy, then I believe, yes, you have a significant desktop publishing application.

Steve Jobs is famous for saying that UNIX is doomed if it doesn't come up with a decent user interface pretty quickly. Is Open Look designed to address that issue?

Well, Steve was saying that when he was at Apple...Since he's left Apple, Apple has made some significant announcements about the future of UNIX on their box.

And of course, by, the way, the Apple people, I guess they're all over in Claris, do all the development in C (an extremely portable language, in which most of UNIX is also written). □

TEK COMPUTER

THE VALUE LEADER IN COMPUTERS

AST PREMIUM/286
- 1.2 MB Disk Drive
- 20 MB HD
- Enhanced Keyboard
- Monographic System

$1995

AST Laser PostScript **Sale $2999**

MACINTOSH™

Mac SE 2 Dr* $2099
Mac SE 20 MB* 2599
Mac Plus ..... CALL
Mac II Mono System 3599
Laserwriters SE/NTX .Call
*Includes standard keyboard

NOW HERE TEK COMPUTERS HIMS 386

20 MHz System Call For Specs & Prices

LEASE TO OWN

Name brand computers costing $1000.00-$10,000.00
From $32 per month to $299 per month, subject to credit approval

COMPUTERS

AST

Model 80	Call	Model 170	Call
Model 90	Call	Model 300	Call
Model 120	Call	Model 340	Call
Model 140	Call	Model 390	Call

WYSE

Model 2108	$1082	Model 2214	$1558
Model 2112	$1568	Model 3216	$2658

IBM PS2

Model 30, 2 drives	$1275	Model 60, 40 Meg	$3399
Model 30, 20 Meg	$1690	Model 60, 70 Meg	$4391
Model 50	$2624	Model 80, 40 Meg	$4699
Model 80 115 Meg	$8295	Model 80, 70 Meg	$5399

Compaq

Deskpro 286, Model 1	$1699
Deskpro 286, 40 Meg	$2499
Deskpro 386, 40 Meg 16 Mhz	$4439
Deskpro 386, Model 60, 20 MHz	$5549
Deskpro 386, Model 130, 20 MHz	$7059
Deskpro 386, Model 300, 20 MHz	$9168
Portable, 2 drive	$1574
Portable II, Model 4	$2999
Portable III, Model 20	$3577
Portable III, Model 40	$4159
Portable 386 Model 40	$5919
Portable 386 Model 100	$7399

TOSHIBA LAPTOPS

1100 Plus	$1529	1000	$888
3100, 20 Meg	$3099	1200	$2370
3200	$4130	5100	$5499

NEC LAPTOPS

NEC Multispeed HD	$2399
NEC Multispeed EL	$1525

ZENITH LAPTOPS

Z-181	All Zenith
Z-183	Models
Z-183, 20 Meg	In Stock
Z-386	Call for Price

Other Computers Available Upon Request

PRINTERS

Citizen

120D	$158	MSP40	$307
124	$484	MSP45	$448
180D	$177	MSP50	$374
224	$657	MSP55	$478
MSP10	$275	Premiere 35	$466

IBM

Pro Printer II	$399	Quietwriter III	$1125
ProPrinter X24/XL24	$525/639		

DICONIX

150P by Kodak	$309
300	$499

NEC

Color P6	$539	Color P7	$699
P6 80 col	$439	P7 136 col	$609
P5XL	$974	P9XL	$1068
P2200	$364	8850	$1097
3550	$729		

EPSON

EX800	Call	LX800	All
EX1000	for	LQ850	Epson
FX86e	Best	LQ1050	Models
FX286e	Price	LQ2500	in Stock

Call for Accessories

OKIDATA

ML 182S	$258	ML182P	$229
ML 193 Plus	$456	ML 192 Plus	$314
ML 293 Plus	$516	ML 292 Plus	$377
ML 393	$979	ML 294	$747

TOSHIBA

P321SL	$499	P351-2 S/P	$935
P341SL	$668	P351-2 Color	$1199
P351	$650	P351SX	$1129

LASER PRINTERS

AST Turbo Laser	$2999
H-P Laser Jet Model 2	$1649
H-P Deskjet	$749
NEC LC890 Postscript	$3358

MODEMS, COMMUNICATIONS & EMULATIONS

AST 5251-11 Plus	$619
Everex 1200B/2400B	$109/199
Hayes 1200/1200B	$289
Hayes 2400/2400B	$424
V9600/2400	$974/674
IBM 1200	$309
Smartcom/Crosstalk	$58/96

NOVELL NETWORKING

STARTER KITS

Western Digital 3 Node LAN kit w/Western Digital software	$924
G-Net 86 w/keycard	$1593
Arcnet 86 starter kit	$1811
Ethernet 86 w/keycard	$2152
Entry-level 286 starter kit, 4 users	$599
Entry-level 286 starter kit, 8 users	$Save

Kits include 2 network cards, keycards, software and manuals. Call for pricing on other kits.

INTERFACE CARDS

Arcnet PC110 LANBoard	$199
Arcnet PC210 LANBoard	$277
Ethernet interface connector	$349
Ethernet Plus board (for 286)	$724
G-Net interface card w/cable	$319

ACCESSORIES

Arcnet Passive Hub	$85
Arcnet Active Hub	$549
Novell 286 software w/keycard	$1569
SFT Netware Level I	$2148
Nondedicated Netware Software 286 w/keycard	$1569

MONOCHROME MONITORS

Amdek 410A	149
Amdek 1280	$679
Compaq monochrome monitor	$188
IBM PS2 mono monitor	$199
NEC Multisync GS	$210
Samsung Amber	$89

COLOR GRAPHIC MONITORS

Amdek color 600T/722	$349/444
IBM PS2 color/Enh	In Stock
Magnavox 14" RGB	$238
Samsung color	$289

VGA & EGA PRODUCTS

EGA MONITORS

Compaq enhanced graphics monitor	$584
NEC Multisync II	$599
NEC Multisync Plus	$888
NEC Multisync XL 19 inch	$1974
Casper	$425
Sony Multiscan	$625
AST EGA	$521

VGA DISPLAY CARDS

AST VGA	$314
ATI VGA VIP	$307
Genoa VGA	Save
Paradise VGA	$297
Quadram Ultra VGA	$299
Compaq VGA	$449
Video-7 VGA	$314

EGA DISPLAY CARDS

ATI Wonder Card	$199
Genoa Super EGA Hi-Res 800x600	$249
NEC GB-1 640x480	$249
Orchid EGA card	$329
Paradise Auto Switch EGA 350	$179
Paradise Auto Switch EGA 480	$199
Everex EGA	$199
Quadram Prosync	$314
Video 7 Vega Deluxe	$268

MONITOR INTERFACE CARDS

Genoa Spectrum (color monographic w/p)	$168
Hercules color card w/p	$146
Hercules monographics plus w/p	$179
Hercules Incolor board	$329
Monographic w/p	$89

DRIVE CARDS

Miniscribe 30 Meg Flashcard	$425
Mountain 20 Meg/30 Meg	$549/819
Plus Development 20 Meg	$569
Plus Development 40 Meg	$836
Western Digital 20 Meg	$399

DRIVES FOR ATs & 286s

Miniscribe 40 Meg 28ms	$616
Miniscribe 80 Meg 28ms	$895
Priam 40 Meg hard disk	$669
Priam 60 Meg hard disk	$798
Priam 130 Meg hard disk	$1989
Seagate 4038 30 Meg hard disk	$499
Seagate 4051 40 Meg hard disk	$599
Seagate 4096 80 Meg hard disk	$849
Seagate 4053 40 Meg	$729
1.2 floppy drive	$110

FLOPPIES, DRIVES & TAPES

1/2 height floppy drive	$99
Miniscribe 20 Meg 1/2 height w/cont.	$329
Miniscribe 30 Meg 1/2 height w/RLL	$345
Seagate 20 Meg 1/2 height hard drive	$269
Seagate 30 Meg 1/2 height w/RLL	$299
Seagate 40 Meg 1/2 height	$425
Seagate 63 MB ST-277	$729
Everex 60 MB int.	$654
Everex 60 MB ext.	$759
Everex 125 MB ext.	$1345
Iomega Bernoulli 10+10	$1395
Iomega Bernoulli 20+20	$1629
Iomega 20 Meg 1/2 height int.	$995
Iomega 20+20 external 5 1/4	$1795
Irwin 10 Meg tape backup	$259
Irwin 20 M/40 M internal tape	$399/539

MISC. & ACCESSORIES

A-B switching box (par or serial)	$39
Kensington Masterpiece	$99
Keytronics 101	$104
Quadram Micro Fazers	$140
Printer Cable (IBM to Centronics) 6 ft.	$14
XT power supply 150 watt	$69

Software

Lotus 1-2-3/Hal/Metro	$299/120/85
Symphony	$410
Framework 2	$365
D Base III+	$395
WordPerfect 4.2	$219
Microsoft Windows	$69
Xerox Ventura Publisher	$499
Aldus PageMaker	$465
Multimate Advantage	$440
Migent Software	LOW

CHIPS

8087-2/8087-3	Best Prices Call
80287-6/-8/-10	Best Prices Call
80387-16/80387-20	Best Prices Call

MICE

Logitech Logimouse Bus Version	$109
Logitech Logimouse C7	$89
Logitech Logimouse C7 w/publisher	$124
Microsoft Mouse (Bus Version)	$119
Microsoft Mouse (Serial) w/Windows	$149
Mouse Systems (Serial Version)	$108
Mouse Systems (Bus Version)	$116

1740 El Camino [illegible]
Santa Clara, CA 95051

(408) 296-0455

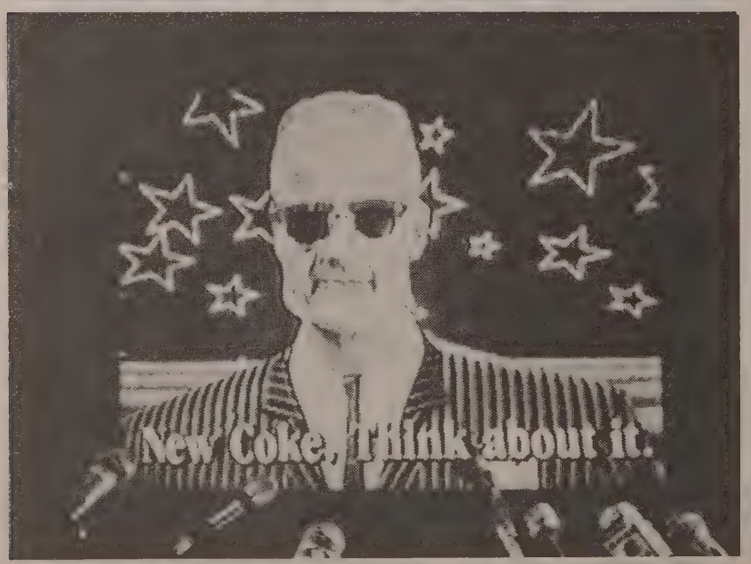
FAX
(408) 296-7439

139 Kearney [illegible]
San Francisco, CA 94108

(415) 362-6870

The Power Of Desktop Video

By Ben and Jean Means



An Amiga was used extensively in the production of Max Headroom, proving that affordable video based on personal computer technology can be sophisticated and professional.

Once there were two firms competing for the same job. On the day of the big meeting, Mr. Smith went into the meeting full of confidence. He took out the proposal he'd done on his desktop publishing system and passed copies to all the board members. After a brief introduction, he dimmed the lights and showed some beautiful slides of his previous jobs and graphs of the savings his wares would yield. After asking a few questions, the board told him they were quite impressed, and he should hear from them soon. As he passed Mr. Jones in the lobby, he thought to himself, "Poor sap, he doesn't have a chance. All that money I spent on desktop publishing and 4000 line graphics slides is really going to pay off."

When his name was called, Mr. Jones strode jauntily into the boardroom. He too passed out his desktop published proposal and asked for the lights to be dimmed, but instead of showing slides, he played a video. Mr. Jones sat back and relaxed while his logo flew onto the screen. Soothing music filled the room as his taped voice described his range of services. 3-D animations illustrated the superiority of his product's design and graphed the savings they offered. A list of his previous clients scrolled across the screen, and as the music swelled, his logo reappeared and flew tumbling off into the distance.

The chairman stammered that he was very impressed, and when could Mr. Jones start installing his system? Jones smiled broadly and assured the chairman he could start delivery immediately!

Score: Desktop Video 1, Slides 0

Smith couldn't justify the cost of the expensive film recorder necessary to create his beautiful 4000 line slides. But Jones was able to create his entire desktop video production with consumer grade video gear and a low priced personal computer — the Commodore Amiga.

While Smith had to sweat out operating a slide projector while making a running commentary, all Jones had to do was put a tape in a VCR and hit play. As CEO of Aegis Development David Barrett says, "If you can walk into a presentation with a good videotape, you no longer have to be nervous. 'Do I look good? Do I have bad breath? Does the guy like me?' He can hate your guts! You can send someone he *does* like with your videotape and get your deal through...because you have the ability to mix music, video and computer visuals to get your point across."

This is the power of Desktop Video or DTV, which Stewart Bonn, Vice President of Electronic Arts' Creativity Division, defines as "the ability to do on a personal computer what video professionals do on pro video gear. What that gear does well is to display a lot of colors at a high resolution with the ability to move objects around on screen quickly and smoothly. Right now, most people think that if they want to communicate via video tape, they have to hire a professional and spend $25,000 to get their message out."

But this ability to mix video taped images, computer graphics, animation, music and narration on the desktop brings the power of Hollywood to your own TV.

While the Amiga is within the economic grasp of consumers and corporate businesses alike, it has broken spectacular new ground in Hollywood by bringing low cost computer graphics to network television. Production Designer Richard Lewis, who has used the Amiga on *Amazing Stories* and *Max Headroom*, says, "We looked at a lot of options when we were doing *Max Headroom*, but they were not cost effective answers. The IBM based systems had limited animation capability and lacked a large range of colors without getting into Targa boards and a lot of money. It's basically a Catch-22 with the IBM, where you can do it, but you're basically bypassing the computer and plugging into another computer which does the job. The host system just happened to be an IBM system; it worked, but it did have a limited color range. When we first started using it, our executive producer was always down on the set saying, 'Let's use a little greener blue.' Well, it didn't have a greener blue. We were never quite happy with it.

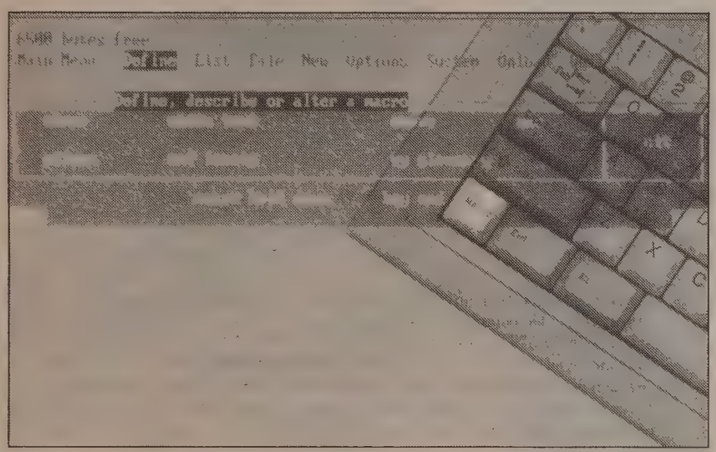
"There's a distrust of low cost technology in Hollywood in general. It took some major wars to get the Amiga accepted on the show. We checked every other alternative, and it kept coming back to the Amiga at that point in time as the solution that fit us the best. There were a ton of things we needed to do live on stage, and you don't just drag a high end Wavefront graphic workstation down to a soundstage."

Selecting A Desktop Video Computer

Desktop video begins with the choice of a graphics computer, and there are four primary elements to consider: NTSC compatibility, resolution,

Make the Most Of Your Keyboard With Macrokey

Macrokey makes your software faster and easier to use. It works inside your software to let you create up to 80 macros per key. No other program offers you the ability to create a total of 5,000 macros.



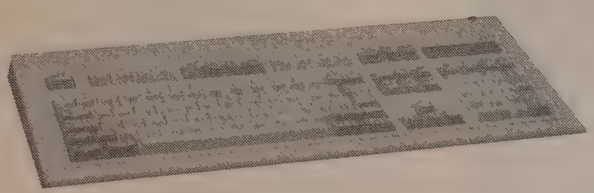
Macrokey is an innovative, utility software program that works in conjunction with the macro key found on the bottom left corner of BTC's Enhanced Keyboards. It frees up the rest of the keyboard so you can:

- Transfer blocks of text or data from one file or program to another.
- Effortlessly interface between DOS, spreadsheets and other applications.
- Automate an exit from one program and initiate a new program.
- Program the 24 hour, built-in timer to schedule modem communications.
- Encrypt your confidential files.
- **AND MUCH MORE**

Now you can add the power of Macrokey to your keyboard for just $89.95. And, you'll receive a $50 rebate toward the purchase of a BTC keyboard when purchased at the same time. If you already own a BTC keyboard, just let us know the serial number and Macrokey is yours for only $39.95. So call the toll-free number below NOW and make the most out of your keyboard with Macrokey.

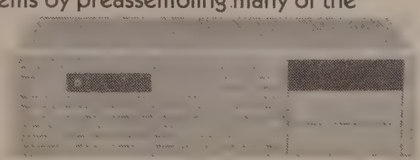
BTC. Your Number One Source For Quality Computer Components

BTC is one of the world's leading manufacturers of computer keyboards. We earned our reputation by delivering exceptional quality and impressive price/performance.

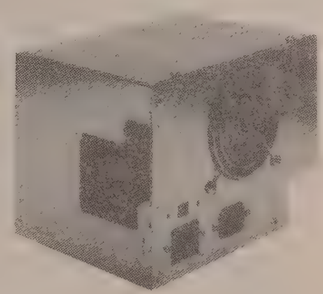


The BTC Enhanced Keyboards for the IBM PC, XT/AT and Compatibles are rugged and feature packed. The sleek, sculptured profile of BTC keyboards gives you just the right touch that includes: 12 function keys, separate numeric pad, separate cursor keys and enlarged ENTER key.

The BTC AT case shows-off its scratch resistant, baked enamel finish that's smooth, tight and laser straight. And, BTC has simplified your job of creating custom systems by preassembling many of the standard system components.
There's a built-in speaker, complete with wiring. All disk drive power supply indicator lights with wiring are neatly tucked away to simplify installation and service.



The BTC PS-6220 Switching Power Supply is designed specifically for high-performance AT Class microcomputers. You can be sure of reliability and expandability because our power supply operates your system with 220 watts, compared to the usual 135 to 200 watts found in most systems.



And you get an A/C selectable switch which allows 110 or 220 volts VAC operation.

So, whether you're an OEM, dealer, or an end-user looking for ways to upgrade quality while reducing total system cost, call BTC.

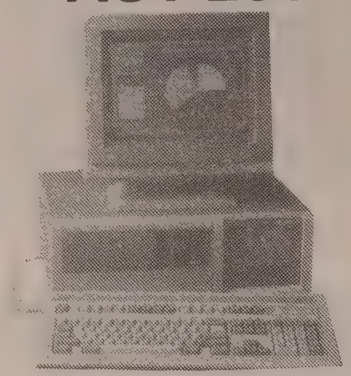
CALL TODAY (415) 657-3956

BTC™

Behavior Tech Computer (USA)
46177 Warm Springs Blvd.
Fremont, CA 94539
(415) 657-3956

TECHNOLOGY SHOWCASE

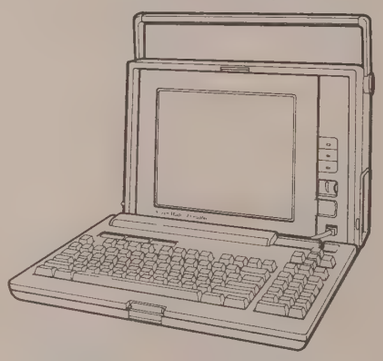
AST 286



Powerful AT Machine
10 MHz-80286 CPU
DOS 3.3
1.2 MB Floppy
PC Magazine's
"Editor's Choice"
In Stock-Call

386 System Available

PowerMate™ Portable

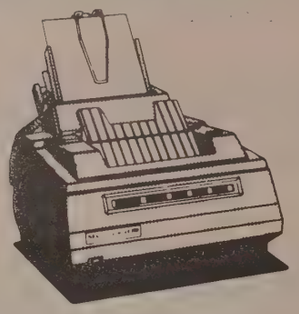


Powerful 80286 CPU, 20-MB 40MS high speed drive, 640K memory, EGA monitor support, electro-luminescent backlit LCD display. Goes where a desktop computer can't!

20 MB
$2595
List $3995

Quality . . .
. . . Service
. . . Products
. . . People
All Designed To Help You With Your Automation Needs!

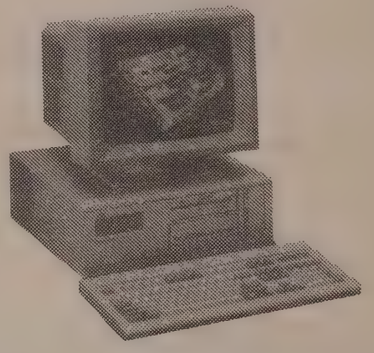
NEC 890 Silentwriter™



"PC Magazine Editor's Choice." Postscript page printer, with 3 MB of internal memory, 35 resident fonts, dual input trays. Interfaces with Apple Macintosh. Great for all desktop publishing applications!

Call for pricing

NEC PowerMate 1-80286



$1395
List $1995

Special
Multisync Monitor
$499 (w/purchase $900 value)

Managing Technology
"Builds Business Success"

SPECIALIZED APPLICATIONS

Novell Networks
Medical & Dental Software
Desktop Publishing

4411 GEARY BLVD. • SAN FRANCISCO, CA 94118 • (415) 386-2700
1151 TRITON DRIVE, SUITE B • FOSTER CITY, CA 94404 • (415) 578-1276

NEW

The Power for New Horizons!

EQUITY II+

Optimum performance for both large and small business users. The Epson Equity II+: the AT compatible personal computer with the speed and features to satisfy the power user, the expandability to keep up with growing business demands and the value to make the most of your purchasing dollar.

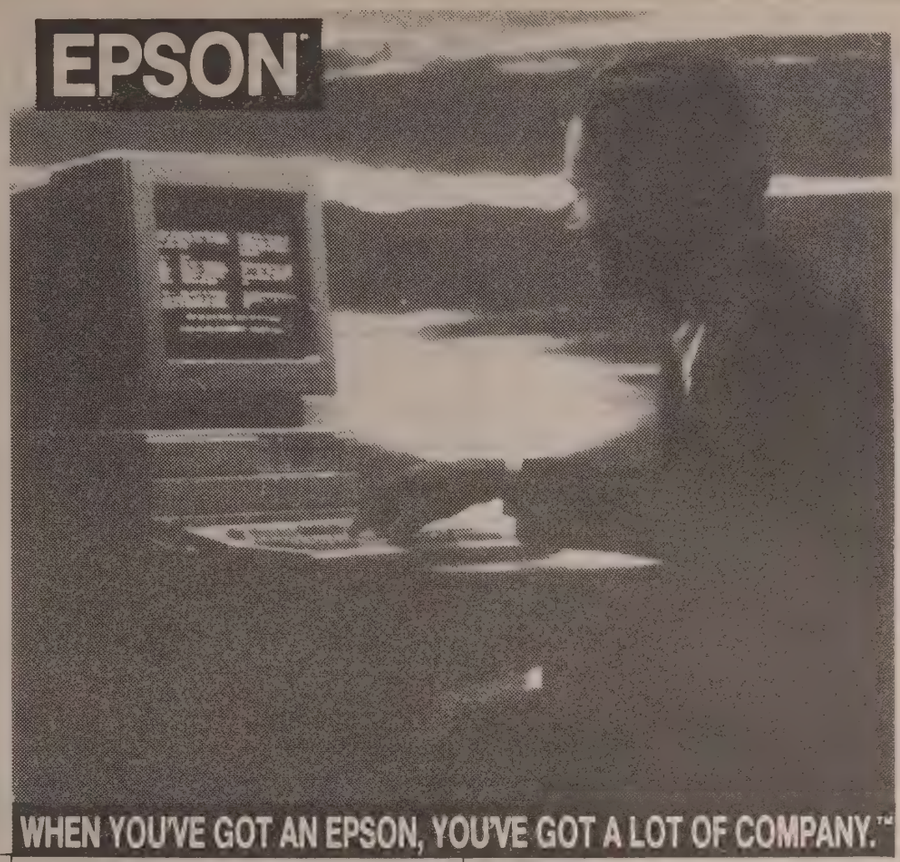
Base System

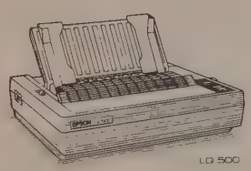
Only $1295

Monitor & Video Adapter

Only $1

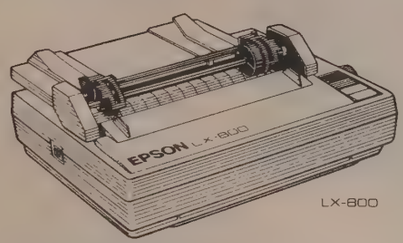
(with purchase)





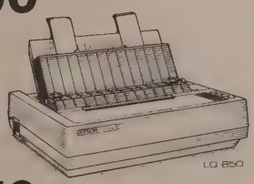
LQ 500

LQ 500



LX-800

LX-800



LQ 850

LQ 850

Call for pricing!

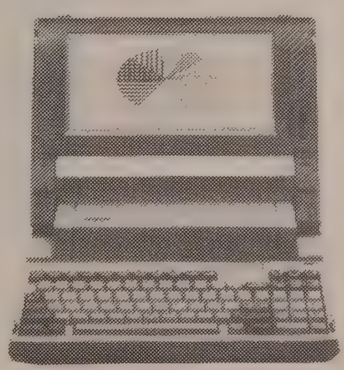
WANTED!

Computer Sales People
Outside/Inside

- **Excellent Salary**
- **High Commission Options**
- **Professional & Friendly Working Environment**

If you know how to sell and want an excellent starting career with high commission potential, call now. Micro computer experience a must; additional knowledge in vertical medical and finance markets, and networking a plus. Call now, positions are limited. Send resume only. Attn: Sales Manager.

EQUITY LAP-TOP



Now you can enjoy the benefits of a truly portable laptop computer that matches the performance of a fully-featured IBM compatible.

- NEC V30 dual-speed microprocessor - 4.77/10 MHZ
- 640 KB
- Weighs less than 13 lbs.

Managing Technology
"Builds Business Success"

BUSINESS INTEGRITY
PRODUCT KNOWLEDGE
EXCELLENT PRICING

4411 GEARY BLVD. • SAN FRANCISCO, CA 94118 • (415) 386-2700
1151 TRITON DRIVE, SUITE B • FOSTER CITY, CA 94404 • (415) 578-1276

color palette, and cost.

National Television Standards Committee (NTSC) encoding is the US standard for television and video and is a basic requirement in a graphics computer. All NTSC video is interlaced; this Interlace mode splits each video frame into an odd set of scan lines and an even set of scan lines. Then they are shot onto the screen sequentially 60 times a second to create 30 full frames per second. This roundabout display method was devised back in the Dark Ages of TV when the phosphors of the old TV sets couldn't retain an image for 1/30th of a second. By splitting the image into two fields, the fresh field could cover for the fact that the old field was fading. Phosphor technology has improved, but to maintain backwards compatibility, interlace is still with us.

An RGB computer image must be encoded to NTSC interlaced composite video before you can use it in professional video editing. Professional RGB to NTSC encoders run anywhere from $2,500 to $8,000, but the Amiga is the only personal computer that comes standard with NTSC output. The A500 and A2000 come standard with a monochrome NTSC out which upgrades to color with an optional $50 converter.

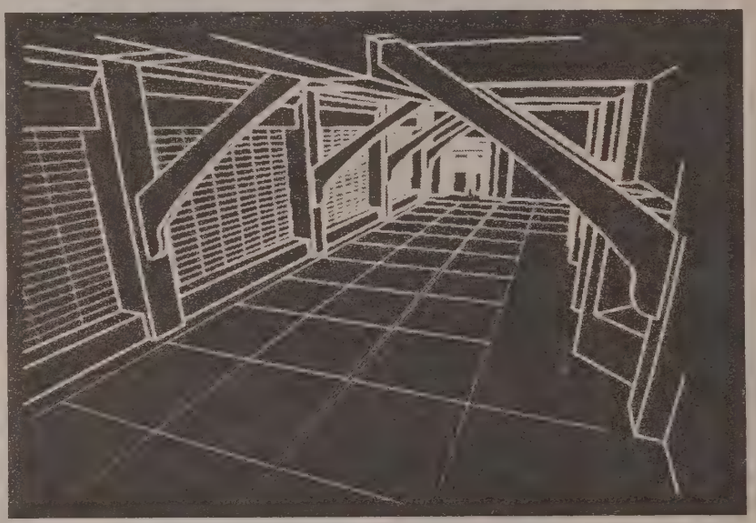
A high resolution produces a sharper image with less stairstepping or "jaggies." High end systems produce displays of 1024 x 1024 pixels and even higher which create smooth images with near photographic sharpness. The Amiga has two interlaced resolutions that are well suited to video: 320 x 400 with 32 colors on screen and 640 x 400 with 16 colors on screen both from a 4,096 color system palette.

These standard Amiga resolutions "underscan" the screen which leaves a rectangular black border around the graphic. This is acceptable for some low-end work, but for higher end uses, you need to use an "overscan" resolution to fill the entire video frame plus a little extra for safety. Many Amiga programs can output full overscan of 384 x 480 in lo-res interlace and 768 x 480 in hi-res interlace to bring your output up to full video frame size.

Both lo- and hi-res interlace have 480 pixels vertically; this is about all you'll ever need, since NTSC video can only display about that many lines of resolution. Unfortunately, VHS and Beta VCRs can only record and play back about 240 or so lines of resolution; even the best broadcast quality is only 330 lines on transmission. The new S-VHS VCR will give you the best possible resolution to tape in a consumer deck and its output of 400+ lines of resolution is still well within the Amiga's range. Of course if you're extremely picky about picture quality, you'll want to go to a 3/4" Betacam or a full 1" professional video bay, but then it's not desktop video any more.

The number of colors in the palette is as important as the resolution; a computer with a large palette can fool the eye into thinking it has a higher resolution by disguising the artifical appearance of jaggies as more realistic shading effects. Professional graphics computers have up to 32 bit color palettes with over four billion colors. These large system palettes eat up huge amounts of RAM and processing power, so a graphics computer will usually use a smaller display palette to speed things up; commonly used palettes on these high end systems range from eight bit (256 colors) up to 24 bit (16 million colors.) The Amiga is the only personal computer to offer a special Hold and Modify mode that offers all 4,096 colors on screen at once and in 320 x 400 resolution.

The cost of fully-outfitted pro graphics workstations starts around $50,000 and run up into the seven figure stratosphere, like the Cray supercomputer for $14 million. In the past, only full-time graphics houses could even think of doing computer graphics and animation. The affordable Amiga 500 systems were selling locally in mid-March for $1,200 to $1,300 with one meg of RAM, a 13" color monitor and two 3-1/2" 880K disk drives. The Amiga is ideal as a cost-effective choice for low-end broadcast and high-end industrial video output.



An example of production manager Richard Lewis' artwork for Max Headroom.

An Expert View Of Desktop Video

For Richard Lewis, the choice was obvious, "Not all work is appropriate to 24 bitplanes of color. What if you only need sixteen colors and 640 x 400 resolution? Why pay $100 an hour or more on a high end system, when for the same cost as renting ten hours on a high end system, you could buy an Amiga? People chronically never have enough money to do what they want to do. The Amiga frees up work which was previously done on high end systems because low end systems couldn't do it."

Stewart Bonn of Electronic Arts which produces software for the whole spectrum of personal computers, finds that only the Amiga and the Mac II have the processing power necessary for desktop video; he adds, "on the Mac II, you can display up to 256 colors; on the Amiga, you go up to as high as 4,096 colors. The Amiga has special blitter hardware to allow it to move things around quickly; the Mac II has a faster CPU."

David Barrett, who develops software for the Atari, Amiga, Mac and Mac II agrees, "I don't think there are any other entry level machines capable of doing desktop video besides the Amiga and Mac II. The current bevy of Atari machines isn't capable, and the Apple IIGS is certainly not technically capable. And what else does that really leave you? The Amiga is clearly a fabulous entry level graphics computer at a consumer price; the Macintosh II will be the esoteric pro piece of equipment.

"But if I had $25 million dollars a year for promotion, I wouldn't get Mac IIs, just to have the Mac IIs. I'd just as soon have ten more people working on Amigas because the person is the talent. The Amiga is great for video demos and in limited applications for broadcast. And you can do your conceptualization on the Amiga, then transfer it to a Mac II for production. A complete Mac II graphic/video workstation is going to be $15,000. It doesn't make sense to tie up that kind of workstation with preproduction."

Aegis is currently working on a program that will directly transfer IFF pictures and ANIM animation files from an Amiga to a Mac II with its 256 color display out of 16 million colors and its speedy 68020 CPU and 68881 math coprocessor. So a person can develop animations on the Amiga and then whip it over to a Mac II for final production.

The Impact Of DTV On Communications

The Amiga is a breakthough video computer that is making its way into professional edit bays across the country where they are quietly being used to augment the work being done on high end systems. Because of its low cost, the Amiga has earned itself a starring role on the nationally syndicated TV series *Secrets and Mysteries of the Universe*, where Jeff Bruette and Cris Palomino of Prism Computer Graphics create scenes from the past, present and future on the Amiga.

Bruette discovered the value of the Amiga in TV and video from his work with Richard Lewis on *Max Headroom*; he says, "A lot of the graphics for *Max Headroom* were done on a Wavefront at the Post Group. They would spend six hours on one technical display; if the producer didn't like it, it meant going back to the bay for another six hours. One day they needed a graphic on Max, and before the message could even get to the Post Group, I had the graphic done. It really upset the people at the Post Group that a guy using a $1,000 on-loan computer just took away a $250 an hour job that would have taken them several hours."

With an Amiga, the aspiring video producer or business communications savant can mix computer graphics, titles and 3-D animations directly onto video tape. Says Stewart Bonn, "There are ways that people are communicating with one another that will no longer use the printed word because you can deliver your message with greater impact and effect through video in a shorter period of time. You can watch a movie in two hours that is based on a book, but you can't read the book in two hours. You have a different experience when you read a book about World War II than when you see a two-hour movie, but the movie is probably a denser way of understanding what the war was about. Most people don't really have a choice right now; if they want to communicate with someone else, they have to use paper and words. What desktop video will allow is for people to choose the appropriate medium."

Personal computers have brought us past the revolution of desktop publishing, and into the new — and perhaps bigger — frontier of desktop video. In the words of Richard Lewis, "Desktop video opens up the ability to express yourself in ways that most people couldn't afford before. The technology from mainframes and minicomputers is filtering downward; what they did three years ago, you can now get close to on today's desktop. If you bought an Iris or a Sun two years ago, it's scary when your competition is doing the same stuff on desktops. Desktops like the Amiga and Mac II are getting so powerful, it's going to make a lot of mainframes obsolete." □

About the authors: Despite the fact that he writes for several national magazines, Ben claims to have no greater knowledge of the English language than what it takes to phone for pizza. Happily, his wife Jean is a trained journalist who specializes in the translation of arcane dialects such as technobabble, MIDI and heavy breathing. Contact them via telepathy, Compuserve #72017,1174 or c/o MicroTimes editorial. *Copyright © 1988 All Rights Reserved.*

Service Contracts & Commercial Leasing Available

We Specialize In Property Management Systems

Great Deals From Professional Computer Management

SPECIAL ON HP LASERS!
LaserJet II . . . . . .CALL

GREAT CLONES

IBM AT COMPATIBLE
0 Wait State, 8-10 Mhz, 1 Meg, 1.2 MB Drive, Keyboard, WD Controller, Graphics Card & Monitor

$1,150

IBM XT COMPATIBLE
XT Turbo, 4.77-10 Mhz 640K on Board, (1) 360K Drive, AT Style Keyboard, Graphics Card & Amber Monitor

$575

IBM

PS II Model 30-002/021	$1230/1625
PS II Model 50-021	2600
PS II Model 60 44 MB/70 MB	Best Price
PS II Model 80 44 MB/70 MB	Best Price

COMPAQ

DESKPRO MODELS:	
386/20 MHz 60/130/300 MB	$ Best Price $
386 40/70/130 MB	4295/4995/5895
286 Model 1/20/40 MB	1850/2295/2550
PORTABLES:	
PORTABLE 386/40 MB	$5595
II Model 4	2595
II Model, 2, 2 Dr., 256K	1895
III Model 20/40 MB	3495/3995

TANDON

Targa-20, 1 Meg, 20 MB	$1699
Targa-40, 1 Meg, 40 MB	2140
Pac 286	Best Price

TOSHIBA

Laptop T1000/1200	$775/2350
Laptop T3100/20 MB	2950

HARD DISKS

Seagate 20/30 MB w/controller	$255/315
Seagate 40 MB for AT	425

MONITORS

Amdek 410A	165
Samsung EGA Monitor	365
NEC Multisync *ALL MODELS*	$ Best Price $

PRINTERS

Epson LQ850/LQ1050/LQ2500	$ Best Price $
Epson FX 286E/86E	Best Price
Citizen Premier 35	455
Toshiba 321SL	495
Star NX1000 w/tractor	250

HEWLETT PACKARD

LJ II	CALL
LJ 500+	3295
1 MB Mem Exp HP/Compatible	369/329
2 MB Mem Exp HP/Compatible	699/629

Wholesale Prices For Dealers

Professional Computer Management
843 Howard Street · San Francisco, CA 94103
(415) 546-3833
Prices subject to change without notice.

Novell Network Specialists

Second Of Two Parts

Tom Campbell: Facing High-Tech Trade Issues In A Competitive World

By Robert Grant Beauchamp

Stanford Law Professor Tom Campbell's bid for the Republican nomination for U.S. Representative of the district including Silicon Valley has garnered the support of such major high-tech players as David Packard and John Sculley.

Tom Campbell, the Republican challenger in Silicon Valley's 12th District Congressional primary, offers an impressive list of credentials. Currently the youngest law professor at Stanford University, he simultaneously earned his M.A. and B.A. in economics at the University of Chicago. He then went on to earn his law degree from Harvard, *Magna Cum Laude*, and was Editor of the Harvard Law Review. Later he received his Ph.D in economics from Chicago.

Washington D.C. beckoned with a clerkship for Supreme Court Justice Byron White and a White House Fellowship. Campbell's public service career continued as Executive Assistant to the Deputy Attorney General and from 1981-1983 as the director of the Federal Trade Commission's Bureau of Competition in the Reagan administration.

Since 1983 Campbell has been teaching international law, trade law and economics on the edge of an area highly impacted by foreign trade: Silicon Valley.

Campbell is running an energetic campaign for the Republican nomination in the 12th District congressional election. This is the same seat once held by the maverick Republican Pete McCloskey and later by Ed Zschau, who gave up his Congressional office in order to run against Alan Cranston in a failed U.S. Senate bid. The seat is currently held by Republican Ernest Konnyu.

Campbell has been busy garnering support from some of Silicon Valley's most prominent figures, including some of Konnyu's former supporters. John Sculley, president of Apple, David Packard and William Hewlett of Hewlett-Packard, Charles Schwab, Ed Zschau and even Shirley Temple Black all count themselves as Campbell backers.

Campbell's specialization in international and trade law is obviously of interest to the major players in an industry facing trade sanctions, trade imbalances, closed markets and competition with foreign government supported high-tech industries. It is also of interest to those who live and work in Silicon Valley and depend on high-tech industries for jobs and a healthy economic environment.

Campbell talked with *MicroTimes* about the issues concerning Silicon Valley's high-tech industry in regards to international trade relations, the deficit and the course government should take in the future.

What do you want to see done for the high-tech industry in Silicon Valley if you're elected to Congress?

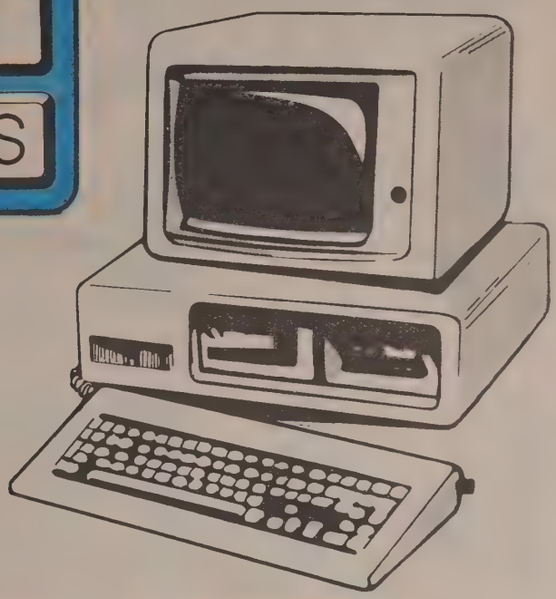
I want to see more representation in trade negotiations. That's essential. America's advantage in trade is high-tech. Silicon chips, for example, have one of the highest research and development costs. That's our competitive edge, that's where our growth is — it's not going to be in labor intensive goods.

An interview with the Republican challenger in Silicon Valley's 12th District Congressional primary.

So in specific terms what I'd like to see is more attention paid to bilateral access agreements, using the September '86 Silicon Chip Agreement as a model, and try to apply that to other aspects of high-tech.

Also to put some end, through countervailing, to foreign government subsidies which still persist. And make sure that America is being fairly treated in regard to reverse en-

NORDIC COMPUTERS



Best Prices
Best Service
Best Quality

TURBO 8088 SYSTEM A $645

10 MHz
2 Floppy Drives
640K RAM
Monographic Card
Monochrome 12" Monitor on Swivel
Keyboard
Serial/Parallel Port
Clock/Calendar

TURBO 8088 SYSTEM B $879

10 MHz
1 20 MB Hard Disk
1 Floppy Drive
640K RAM
Monochrome Graphics Card
Monochrome Monitor on Swivel
Keyboard
Serial/Parallel Port
Clock/Calendar

386 SYSTEM $2195

16 MHz—0 Wait State
64K Cache Memory
1024K RAM
Hard Disk Floppy Controller
1.2 MB Drive
Monochrome Graphic Card
Monochrome Monitor on Swivel
Enhanced Keyboard
Parallel Port/Serial Port
Clock/Calendar
FEATURES THE MYLEX BOARD

Upgrade options for AT/XT

CGA color monitor w/CGA card	$195
EGA color monitor w/EGA card	$425
Upgrade to enhanced keyboard for XT	$20

COMPONENTS

1200 Baud Modem	$79
2400 Baud Modem	$185
Logitech C7 Mouse	$79
360K Fujitsu Drive	$75
XT Multi I/O	$75
Turbo Motherboard	$85
Monochrome Graphics Card	$55
Enhanced 101 Keyboard	$75
Monochrome Monitor on Swivel Stand	$79
CGA Color Monitor	$275
EGA Color Monitor	$385
EGA Card	$165

286 System A $949

10 MHz
0 wait on RAM
512K RAM—100ns
Hard Disk/Floppy Controller
1.2 MB Drive
Monographic Printer Card
Monochrome Monitor on Swivel
Enhanced Keyboard
Parallel Port
Clock/Calendar

286 System B $1759

10 MHz
0 wait on RAM
1024 K RAM
Hard Disk/Floppy Controller
1.2 MB Drive
Monographic Printer Card
Monochrome Monitor on Swivel
Enhanced Keyboard
Serial/Parallel Port
40MB Hard Disk
Clock/Calendar

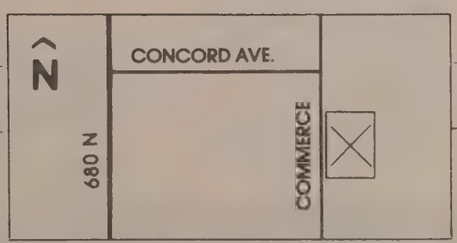
One year warranty on parts & labor on all systems.

Prices subject to change without notice.

DEALER INQUIRIES WELCOME.

2170-R Commerce Avenue, Concord, CA 94520 (415) 687-3050

809-B West Texas St., Fairfield, CA 94533 (707) 425-5998

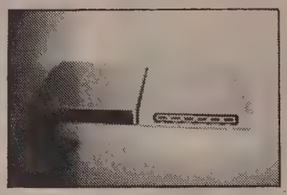


M-F 10:00-6:00 open Sat 10:00-4:00

AT/XT ARE TRADEMARKS OF IBM

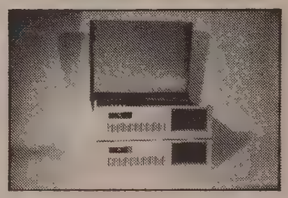
Unbelievable Prices Specials!

Adjustable Chair
Reg. $39.95 Sale **$35.00**

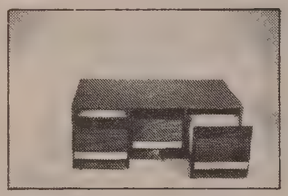


AC Power Center
Reg. $19.95 Sale **$15.00**

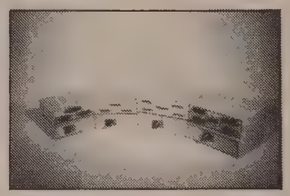
System Stand for AT and XT
Reg. $19.95 Sale **$14.00**



AT Style S/I Case with 150W Power Supply
Reg. $75 Sale **$65**



Diskette Drawer with Lock for 5¼"
Reg. $24.95 Sale **$19.00**



Data Switch Box	#252	#254	#362	#364
Regularly	$24.95	29.95	28.95	32.95
Sale	**$18.00**	**24.00**	**22.00**	**26.00**

misc

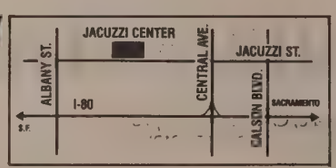
item number	description
surge protector:	
eg-10	ac power center w/base — $19.00
eg-02	6 outlet power strip (ul) — 9.00
copy holder:	
d-2ch	copy holder w/root (metal) — $14.00
dt-31a	copy holder (plastic) — 9.00
dt-32a	copy holder w/adjustable arm set — 24.00
stand:	
ps-132	printer stand (132 column) — $15.00
ps-80	printer stand (80 column) — 14.00
ps-11	printer stand (pair) — 7.00
ms-12	12" monitor stand — 14.00
ms-14	14" monitor stand — 16.00
diskette file:	
dd-120L	cap. 120pcs for 5¼" w/lock — $9.00
dd-100L	cap. 100pcs for 5¼" w/lock — 7.00
dd-50	cap. 50pcs for 5¼" w/lock — 7.00
dd-5	cap. 5pcs for 5¼" — 1.00
dd-80L	cap. 80pcs for 3½" w/lock — 8.00
dd-40L	cap. 40pcs for 3½" w/lock — 6.00
dd-10a	cap. 10pcs for 3½" — 2.00
monitor filter:	
m-12	for mono 12" — $15.00
m-14	for mono 14" — 17.00
c-12	for color 12" — 17.00
c-14	for color 14" — 19.00

item number	description
ibm shielded parallel cable:	
eg-04	6 ft. printer cable — $5.00
eg-05	10 ft. printer cable — 7.00
centronic cable:	
ds-4/5	6 ft. centronics m/m.m/f — $9.00
rs232 serial cable:	
ds-1/2/3	6 ft. serial cable m/m.m/f.f/f — $7.00
ds-10	at modem cable 9-25 pin 3 ft. m/f — 5.00
hd-1	xt HDD cable — 4.00
hd-2	at HDD cable — 7.00
fd-1a/1	monitor exten. cable m/m.m/f — 7.00
fd-2	key board exten. cable m/f. 6 ft. — 7.00
gender changer:	
ds-8	25 pin m/m.f/f — $5.00
ds-7	36 pin m/m.m/f.f/f — 9.00
ds-8a	null modem m/m.m/f.f/f — 5.00
switch box:	
ds-1a	mini ab box w/cable — $29.00
other:	
dt-21	key board drawer (metal) — $29.00
eg-01	joy stick for IBM/APPLE — 18.00
dd-2	diskette notcher (metal) — 4.00
eg-12	mouse pad (blue and red) — 6.00
fd-05	head cleaning kit for 5¼" — 4.00
fd-03	head cleaning kit for 3½" — 5.00

Terms and Conditions

a). prices subject to change without notice.
b). not responsible for type error.
c). subject to stock on hand.
d). price vary at store.
e). UPS order minimum $50.00 purchase.
f). all prices are F.O.B. richmond.
g). terms: C.O.D. cash/cashiers check.
h). shipping: exact UPS plus one dollar per carton handling.
i). restocking charge: fifteen percent of invoice amount within 30 days.

EVERGREEN COMPANY
5327 Jacuzzi St. Bldg. 4 #T
Richmond, CA 94804
(415) 526-8667
Hours: Mon-Sat 10:00AM-6:00PM



Interest rates being high means there are start-ups that don't happen and that means jobs, entrepreneurship, opportunities that are lost.

gineering, which is a tremendous problem. This includes violation of copyright, patent, trademark, and the Semiconductor Mask Protection Act.

We are getting a little bit better at recognizing foreign companies that reverse engineer, but our laws are still archaic. In the trade bill that is going before the president right now, we have taken some steps, to correct this. One is that, under section 301, the president has the authority to respond to violations of trade agreements or international agreements dealing with trade, such as a tariff agreement. It has now been defined that failure to adequately protect American copyright, patent, or trademark is a premise for a 301 violation, and that's good.

The part that isn't particularly good is 337. When a *private company* wants to bring an action against an importer he or she believes has reverse engineered, that American has to prove that the *industry* is hurt, not just his or her business, and that the *industry* is efficiently and economically operated. Then the sanctions go to the President for a possible veto; all of which takes place before goods can be kept out.

That issue is addressed in the new trade bill, but no one knows what version will emerge following the President's veto.

So these are the things I'd want to do in Congress, principally in the trade area. Get us the attention we deserve in the trade talks, reform 337 law here particularly, and also countervail against foreign government subsidies.

Could you explain countervailing?

When a good comes in from overseas which has a subsidy in it, the American law allows a tariff to be imposed equal to the amount of the subsidy. So if a Toyota comes in and MITI [Ministry of International Trade and Industry, the agency which is principally responsible for directing investment in Japan and developing export trade] bought the steel for Toyota, then we could add on the cost of the steel.

The present gap is that we don't do that for the cost of capital, only for the physical input. And only then if it's targeted for export. Take Japan as an example, where the interest rate is at 4-1/2%. In America prime is at 8-1/2, 8-3/4. MITI assists in rationing that credit. Well, it's the same thing as buying the steel if you can get 4-1/2% money. So that's something we could change on our own. I think we should be negotiating with our trading partners, of course, but there's some changes we need to make too.

Right now we only countervail against input subsidies — that's to say if Japan, Korea, Hong Kong, Taiwan, Singapore buys the silicon and gives it to the company. But when they float a number of industries below-market rate interest loans, its not countervailable. And that, to me, ought to be considered countervailed.

Getting beyond trade, as the prospective representative for a large part of Silicon Valley, what do feel you should do for workers in the high-tech industry?

Overwhelmingly, get the interest rate lower. And get our market share higher. Interest rates being high means means there are start-ups that don't happen, and that means jobs, entrepreneurship, opportunities that are lost.

The interest rate is directly related to the budget deficit. And as long as we have a budget deficit of $2.17 trillion, growing at the rate of $160 billion, we will have high interest rates, substantially higher than our trading partners.

That's the number one thing that we can do for the sake of everybody in Silicon Valley. Lower the interest rates through getting at the budget deficit, and getting our market share higher, which also means jobs. And it also means fair trade. An opportunity to sell in markets that are, at the moment, closed to us.

What's your view of the deficit, then, and how would you vote in Congress on legislation concerning the deficit?

The most important cause of the deficit is the increase in government spending without an increase in revenue. This happened in the first six years of the Reagan administration. Congress is to blame as much as the president, but there is enough blame to go around. Both allowed it to happen.

What has to be done is to cut spending, both defense and social. I disagree with those who say you can solve a budget crisis just by cutting

LIGHTNING SPEED!!!!

20 MHz 286 AT SYSTEM BOARDS

Samples Are Available At Only $319

SPECIFICATIONS:

- Intel 286 Base Running At 15 MHz With 0 Wait State
- High/Low Speed Can Be Selected Softwarely Through Keyboard
- I/O Speed Is Selectable In Between High/Low System Clock Rate
- System Board Equipped With Eighty Expansion Slots of 16/8 Bit Bus
- Rechargeable Battery, Real Time Clock
- Jumpers For Speed, Power Indicators Hardware Reset Connector
- Memory Can Be Configured To 256K, 512K, 640K or 640/384K

Require 80ns or faster DRAM

PERFORMANCE:

A. μ Design Speed Test	COMPAQ 386 16 MHz	MDC FTNG 2-16C
Checking memory block write ticks:	77 compared to IBM/PC 655%	50 compared to IBM/PC 1010%
Checking register to memory ticks:	65 compared to IBM/PC 755%	62 compared to IBM/PC 791%
Checking memory to register ticks:	80 compared to IBM/PC 612%	73 compared to IBM/PC 671%
Checking register to register ticks:	74 compared to IBM/PC 744%	74 compared to IBM/PC 744%
Checking divide by register ticks:	33 compared to IBM/PC 1551%	32 compared to IBM/PC 1600%
Checking divide by memory ticks:	47 compared to IBM/PC 1285%	46 compared to IBM/PC 1600%
Checking multiply by memory ticks:	46 compared to IBM/PC 1210%	35 compared to IBM/PC 1313%
Checking multiply by register ticks:	26 compared to IBM/PC 1850%	43 compared to IBM/PC 1295%
Checking stack operations ticks:	77 compared to IBM/PC 577%	65 compared to IBM/PC 686%
Checking far jumps, far calls ticks:	101 compared to IBM/PC 513%	81 compared to IBM/PC 640%
Total Time is: 626 clock ticks:	(34 seconds) compared to IBM/PC 823%	(31 seconds) compared to IBM/PC 918%

B. LANDMARK SPEED TEST	**19.9 MHz**	**20.2 MHz**
C. NORTON SI INDEX	**17.7**	**18.7**

CALL ABOUT OUR COMPLETE LINE OF COMPUTERS—386, AT, XT PRINTERS, ADD ON BOARDS and PERIPHERALS

For more information, call or write to Your Bay Area Dealer

MICRO DISTRIBUTION CENTER

MICRO DISTRIBUTION CENTER

525 Del Rey Avenue, Unit H, Sunnyvale, CA 94088 (408) 730-6965
15524 Broadway, Center Street, Gardena, CA 90248 (213) 515-0155

FOUNTAIN

80386 SYSTEM

- 20 MHz 0 Wait State Speed
- 1 MB memory expandable to 2 MB, 80287/80387 socket
- 200 W power supply
- AT style case
- 1.2 MB floppy disk
- Hard disk & floppy controller
- Enhanced 101 keyboard
- 2 serial/2 parallel
- Built in EGA board
- Printer port
- 32 bit slot

Only $2150

8088 TURBO XT COMPLETE MONO SYSTEM

- 4.77/8 MHz 256K RAM
- 360K floppy drive
- Hi-Res MPG
- AT style keyboard
- 150 W power supply
- Hi-res mono monitor
- One year warranty

$456

NO HIDDEN COST
READY TO RUN!

10 MHz System $479

6/10 MHz 0-WAIT MONO 80286 SYSTEM

- 512K RAM Exp to 1 MB on motherboard
- 1.2 MB drive
- FD/HD controller
- 200 W power supply
- Hercules compatible mono card
- AT style keyboard
- High-res mono monitor
- One year warranty
- OS/2 tested

$889 BABY AT SYSTEMS AVAILABLE

NO HIDDEN COSTS
READY TO RUN!

6/12 MHz 286 SYSTEM $989

ADD ON BOARDS

Monochrome graphics/Printer port	$45
Color graphic card/printer port	45
Everex micro enhancer EGA	125
Everex Super EGA (800x600)	145
XT floppy controller 360/720K	22
1.4/360 floppy controller	45
RS-232 card	45
AT-I/O card (S,P,G)	49
Hard disk controller + cable	55
AT FD/HD dual controller	105
DTC RLL controller AT	149
AT Everex 3 MB RAM card	84

MONITORS

Samsung EGA	$330
Goldstar Mono	60
Relisys EGA	339
NEC Multi-Sysn (II)	579

KEYBOARDS

Keytronics 101	$49
MIT (AT style)	39
BTC 5339 enhanced	49
Maxi-Switch 84/101 key	54/65

DISK DRIVES

Fujitsu 360K/1.2MB	$69/83
Teac 360K/1.2MB	75/89
Toshiba 3.5" drive (720KB)	89
Toshiba 3.5" (1.44 MB)	129
20 MB ST-225 kit	255
30 MB ST-238 kit	279
ST-225 (20MB)	215
ST-238 (30MB)	235
ST-251 (40MB	360
ST-4053 (40MB)	578
ST-4096 (80MB)	678

PRINTERS

Ricoh daisywheel (22 cps, 132 col)	$199
Epson LQ 500	365
Citizen 180D	185
Citizen 120D	150
Panasonic 1091i	209
NEC P2200 24 pin	365
Epson LX-800	209
Star NX-1000	185

SYSTEM BOARDS

4.77/8 MHz turbo XT motherboard (OK)	$75
10 MHz turbo XT motherboard (OK)	80
80286 6/10 MHz 0 wait AT M/B Special Price	249
80286 6/12 MHz 0 wait state AT MB w/80286-12 CPU	310

COMPUTER CASE

XT case	$27
AT Jr. case XT	32
Tower case	250
AT case	55

MISC.

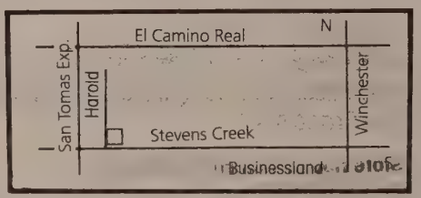
DOS 3.3	$83
6' printer cable	5.50
Keyboard drawer	29
Power station	19
Printer switch box (AB/ABCD)	20/29
Logic mouse C7/Bus mouse	69/75
Keyboard extension cable	8
Monitor extension cable	8
Mouse pad	7
Joystick	19
Surge protector	9
Modem Int. 1200	60
Modem Int. 2400	120
Modem Ext. 1200	95
Modem Ext. 2400	165

COMPUTER SPOT Inc.
(408) 246-7701

We Do System Repairs,
Diagnostics & Upgrades On Your
PC/XT/AT/80386

Mon-Fri: 10-7:30
Sat: 10-6

3575 Stevens Creek Blvd.
Suite E
San Jose, CA 95117



DEALER INQUIRIES WELCOME

social spending or getting rid of welfare cheaters.

On the revenue side, lower the long-term capital gains tax. That actually will increase revenue. I've no doubt about it. Right now it's at 28% for individuals and 34% for corporations. It ought to be at 17% for both. That would be an optimal revenue raising rate.

But even that won't be enough. We'll have to increase consumption taxes on alcohol, tobacco and gasoline. The numbers are staggering. If we were to take the federal tax on alcohol, which is now four cents on a bottle of wine, and tobacco, which is about 18 cents on a package of cigarettes, and double it, we could raise 11 billion dollars.

Even so, if we took Gramm-Rudman — which is my plan, to take Gramm-Rudman spending cuts, without allowing Congress to exempt itself from the Gramm-Rudman process — you would have had $23 billion in cuts last year. To that we should add $23 billion in revenue from alcohol, tobacco and gasoline. If we don't do that, the budget deficit will continue to grow.

Have you met any resistance among your Republican colleagues to your desire to raise taxes?

My opponent [Konnyu] has criticized me. He believes that we can solve the budget deficit just by cutting social spending. He's never voted against a defense bill, and he staunchly says no tax increases. The numbers just don't work out, however.

Have you met any resistance then from high-tech firms, many of which are defense contractors?

No, everyone realizes that there are substantial savings in defense procurement policies. Indeed, in terms of what this district makes, it might be that some of those improvements would actually be good for business. For example, buying off-the-shelf instead of to-specification might increase the sales of chips, which are a major defense procurement item.

Could we go into a little more depth about what you'd like to see happen in international trade policy?

The first step would be to use this Montevideo trade round to achieve what has never been achieved before, and that is for individual products to find targets for market access in those markets which have been closed. I'm speaking predominantly, but not exclusively, of Korea, Taiwan, Hong Kong, Singapore and Japan.

What has traditionally been done in the 40 years of trade negotiations under the GATT (General Agreements in Tariffs and Trade) is to identify, in particular, practices that individual countries promise not to engage in.

That's been productive, it's been fruitful — but it hasn't addressed the questions of market access to closed economies or third-country dumping. That's where goods are sold into a third country at a price below that of the price in their own country. Take the example of chips from Japan being dumped in Korea — it's the same with rice, by the way, if you want to choose an agricultural commodity. America cannot retaliate against that by imposing a tariff on chips, because it's in a third market.

As for the products of this district, I think there's no question that we have been fair in opening up access to our markets. And we have not received equal treatment overseas.

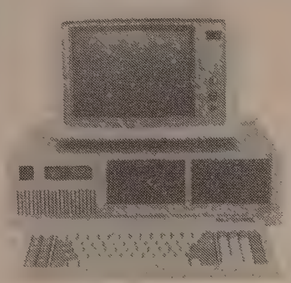
The next step in trade has to focus on bilateral agreements, whereby country-by-country agreements will be made not to engage in this third-country practice. Certainly not where there's a subsidy involved. Also that they will cut back their subsidies and that they will have a target's for market access in their own countries.

Now to get that, you have to be willing to give up something, you have to trade. I'm not urging that we unilaterally insist upon it. So America would have to be prepared to give up some aspects of its own protectionism.

Principal among them would be agricultural subsidies. I mean, negotiate, don't give it up without getting something in return. We also protect industries that are not capable of responding to international competition through what's called our escape clause, section 201 of the '74 trade

The Low Price Leader

IBM AT Compatible System

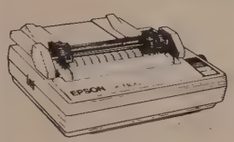


System comes equipped with 1 drive, 640K RAM, mono monitor & card, 0 wait state, 6/10 MHz

Our guarantee to you is 2 years on parts (excludes labor)

From $1190

FREE Epson LX-800 Printer
(Included with above system)

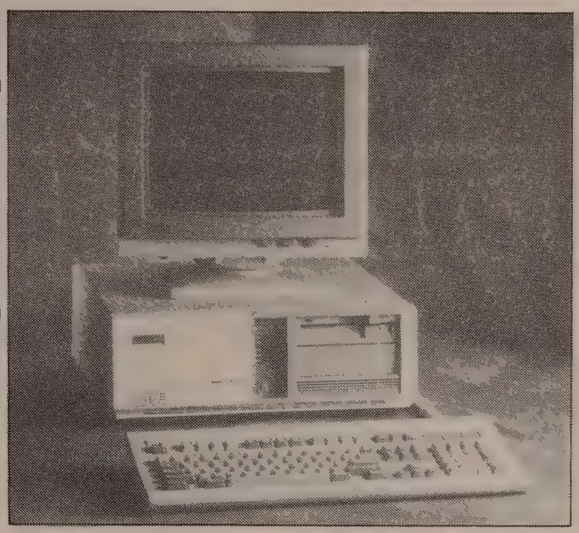


EPSON PRINTERS

Compatibility Power
Performance Value

- Full featured, 80 col. dot matrix printer for affordable performance in the home or office.
- 180 cps draft speed delivers outstanding productivity
- 30 cps Near Letter Quality mode for enhanced output

Everex 286 AT

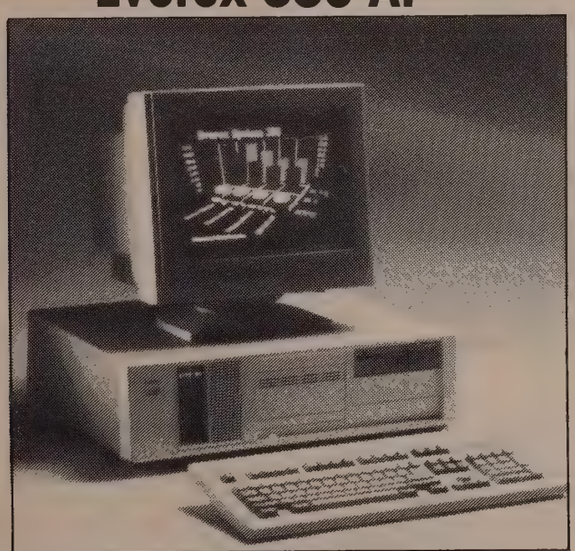


System comes equipped with 1 drive, 512K, 8 MHz
Our guarantee to you is 1 year parts & labor
Manufactured in Fremont, CA

From $995

EVEREX

Everex 386 AT



EVEREX

Available Now!

IBM PC/XT Compatible System

From $749

System comes equipped with 2 drives, monitor & card, 512K RAM, 10 MHz Speed. Our guarantee to you is 1 year parts & labor.

We Carry All Your Major Hardware Needs!

TOKYO ELECTROLAND

FULL SALES & SERVICE OF ALL COMPUTERS

(415) 777-2100

650 Mission Street (At New Montgomery)
San Francisco

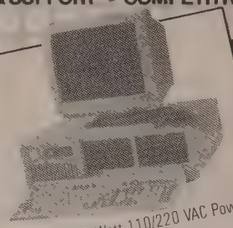
Store Hours: Mon-Fri **10:00-6:30**
Sat. **10:00-5:30**

IBM PC/XT is a registered trademark of International Business Machines, Inc. Everex is a registered trademark of Everex Computer Systems Division

All computer prices reflect cash discounts. We accept Visa/MasterCard on non-sale items. Prices subject to change without notice.

aborn COMPUTER

PROFESSIONAL SERVICE & SUPPORT • COMPETITIVE PRICES • REPAIR

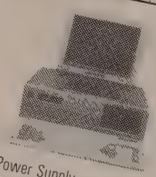


TURBO XT SYSTEM
$479

- 100% IBM Compatible
- 4.77/10 MHz Switchable
- 256K RAM Expandable 640K
- 8087 Math Co-Processor Socket
- 8 Fully IBM Compatible Expansion Slots
- 360K Half-Height Drive
- Floppy Controller Card
- Hercules Compatible w/Printer Port
- Hi-Resolution Amber Monitor
- 150 Watt 110/220 VAC Power Supply
- BTC Keyboard w/LED's Enlarged Return, Shift Key
- Heavy Duty Case w/Reset, Turbo, Keylock
- Runs all, MS-DOS, PC-DOS, Lotus, D BASEIII, AutoCAD, Wordstar, Flight Simulator, etc.
- Full One Year Warranty Parts and

OPTIONS:

Same System $559
w/2nd Drive 759
w/20 MB Seagate HD ..... ADD $185
Color System ..... ADD $390
EGA System .....



AT 286 SYSTEM
$859

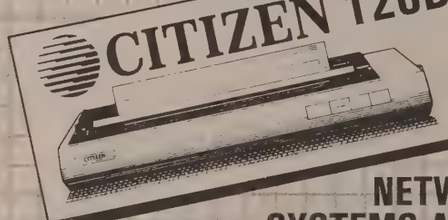
- 100% IBM AT Compatible
- 512K RAM Expandable to 1 MB
- 6/13 MHz Switchable
- 80287 Math Co-Processor Socket
- 1.2 MB ½ Ht. Drive
- Master Floppy Controller Card
- Hercules Compatible w/Printer Port
- 8 Fully IBM Compatible Slots
- Hi-Resolution Amber Monitor
- 200/220 Watt 110/220 VAC Power Supply
- BTC 5339 Enhanced Keyboard w/LED's
- Heavy Duty, Lockable Case w/Reset, Turbo & LED's
- Run all MS-DOS, PC-DOS, Lotus, DBASE III, AutoCAD, Wordstar, Flight Simulator, etc.
- Full One Year Warranty Parts and Labor

OPTIONS:

Same System w/360K Drive $939
w/40 MB Seagate HD 1299

ALL SAMSUNG MONITORS & CITIZEN PRINTERS AT BEST PRICES

386 SYSTEM $1899 Call For Info



CITIZEN 120D $147

NETWORK SYSTEMS AVAILABLE

BEST PRICES • BEST SUPPORT • BEST QUALITY
DEALER & CORPORATE INQUIRIES WELCOME

aborn COMPUTER

PROFESSIONAL SERVICE & SUPPORT • COMPETITIVE PRICES • REPAIR

3260 S. White Rd.
San Jose, CA 95148

(408) 270-5888
270-5889

VISA DISCOVER

Prices Subject to Change W/O Notice These Prices Reflect a 3% Cash Discount

act. What that does is to lift the price to the American consumer by excluding imports for a period of years, without any necessary hope that the American industry will be able to recuperate.

We have to be willing to give as well as to get. As for the products of this district I think there's no question that we have been fair in opening up access to our markets, but we have not received equal treatment overseas.

How would you have handled the Toshiba Marine scandal, and how would you like a similar situation to be handled in the future?

Tightening up the export control act to make sure that those items of great strategic value are very closely supervised. We ought to loosen up those restraints on products of virtually no strategic value. Part of the problem in our export control act is that we had so many items on the list that we lost credibility and we dissipated our enforcement energies, not only our own but our allies.

Most of the export control act is enforced through our allies. We will allow an American firm, for example, to export, a good, which will then be trans-exported to another country. The control of trans-shipment is entirely in the hands of our ally.

But if the list includes Speak & Spell [an educational toy], I can understand how they pay less and less attention to it. We are seeing improvements right now to pare down the list to items of true strategic value, and I'm hopeful these will continue. It's particularly important to me in the information technology area.

Then, when you find a violator, criminal sanctions are absolutely essential against everybody involved in the scandal. And that, it seems to me, should be done swiftly. We should also request it of our allies in the event that they do not extradite. I think there's no alternative but criminal sanction.

There's also a risk of overreaction where you try to punish those who have not been involved. Parent corporations, for example, who have no control or no knowledge and could not have had knowledge of a subsidiary's conduct. I don't see any value to that. Nor do I see any value to smashing a Toshiba tape deck on the steps of Capitol Hill. A waste of one good tape recorder. That's an emotional, not an intellectual, response.

Would you like to see some markets in Eastern Bloc countries and China, such as personal computers, opened up to American high tech industries?

I don't know the precise items, because there are aspects of personal computers that could have strategic value. But let me say, in general, that we need to have much more trade, particularly with China, which for the better part of ten years we closed off entirely, to their great loss and our great loss. I am strongly of the view that we should be doing more trade, not less, and take into account the reality that a lot of that technology is already available on the free market.

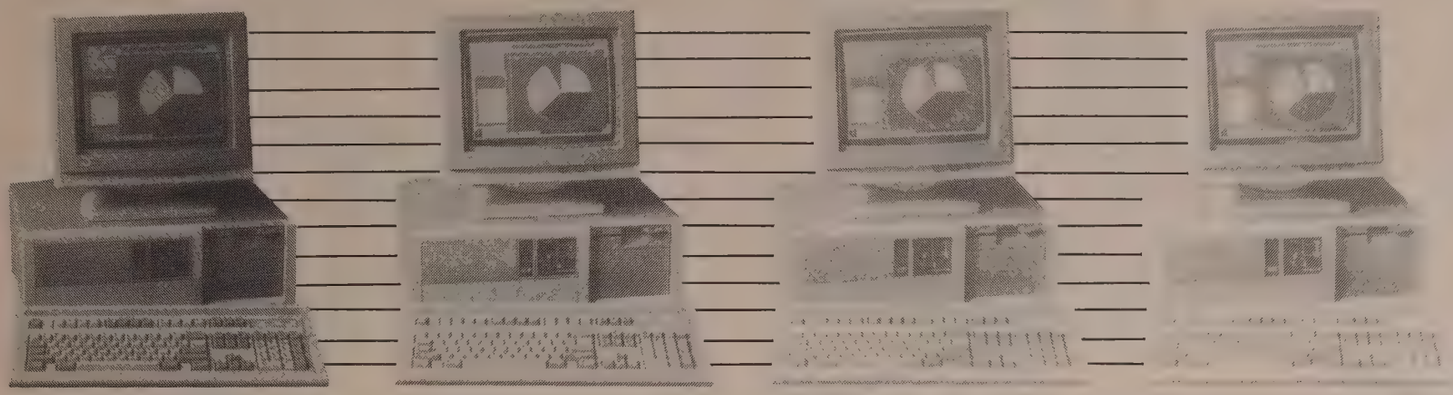
We ought to loosen up those restraints on products of virtually no strategic value. Part of the problem in our export control act is that we had so many items on the list, that we lost credibility and we dissipated our enforcement energies.

Could you talk a little bit more about the R&D tax credit?

One of the great worries I had was that Congress, in its rush to evade the Gramm-Rudman budget cuts, said that they had a better package. Part of that was zeroing out the research and development tax credit. It was eventually saved, but I think it should be made permanent.

I'm also concerned about cooperative research and development. When I was in the administration, I had a role to play in the joint Cooperative Research and Development Act, which was an antitrust exemption, which allows something like Sematech to exist. I was director

Get **Four Workstations** From **One 386**



Eliminate Unnecessary And Complicated Network And Communication Hardware

Desktop Publishing Laser Printers and Monitors

A breakthrough in multi-user simplicity. We will help you **design and configure** single and multi-user 386 systems. **More Power at a Fraction of the Cost! Guaranteed Lowest Prices in the Bay Area! Call today for details. Consultant and Developer . . . Inquiries Welcome.**

386 Dream Machine! Design Your Own.

From Novice to Professional
Wonder Plus from Bourbaki **Brings Your Computer Out of the Ice Age**

The First Choice of Consultants and Professionals for Hard Disk File Management and Custom Menuing

Wonder Plus is the **ultimate shell** for tying all your applications and computer operations together, in one integrated system. Wonder Plus provides you with a powerful and flexible DOS environment, combining both **Hard Disk File Management** and custom menuing features. "Point and Shoot" all file and directory related commands, and run your applications with the push of a button. RAM resident, Wonder Plus is there when you need it.

Hard Disk File Management

- **Point and Shoot** commands to **Copy, Erase, View, Edit, Move, Locate, Rename, Search, Back Up,** and **Restore** files and directories.
- **Tree Structured Directory** for changing, making and removing directories.
- **Built-in Editor** for editing and printing any type of file [ASCII, Extended ASCII and HEX].
- **Global File Operations**
- **Eight "Faces"** for user-selectable screen display.
- **Menu Library** for menu and command access.
- **Directory Personalities** to customize every directory.
- **Print** files, directories and Trees.
- **Command Help** at the push of a key.
- **Wonder Plus** provides all these simple and powerful tools.

Custom Menuing

The **Menuing System** provides an easy way to set up custom commands and menus to run programs and applications. Further customizing features include:

Select from 8 optional screen displays, ranging from the simple to the sophisticated, from the novice to the expert.

Tailor each and every directory to display only the desired files, sorted the way you want.

Find out why Wonder Plus is the preferred File Management and Menuing tool for PC users everywhere! Call today.

Sale $55 Limited Time Only!

Regularly $99

Evaluation copies available to qualified **MicroTimes** Advertising Dealers and Consultants. Call for details.

MCSE

MILLENIUM COMMUNICATIONS

critical design intelligence

3030 BRIDGEWAY
SAUSALITO, CA 94965
415 332 8141

TELEX: 697 2836
FAX: 415 332 4003

& MICROTIMES
PRESENT
THE FOLLOWING

COMPUTER SHOWS & SALES

► Saturday 5/14
Santa Rosa Computer Show & Sale
Sonoma County Fairgrounds
Junior Exhibit Building
Take Sonoma/Sebastopol Exit
Follow towards Sonoma

New Show!

► Saturday & Sunday 5/14 & 15
Amiga - Commodore Computer Users Show & Sale
Santa Clara Convention Center
5001 Great America Parkway
Across from Great America

Special 2-Day Show!

► Saturday & Sunday 5/21 & 22
Oakland Computer Show & Sale
Special Atari Section!
Oakland Coliseum Exhibition Hall
Take Hwy 880 to Hegenberger Exit

► Saturday 6/4
Sacramento Computer Show & Sale
Cal Expo Building C
Take Business 80 to Exposition Blvd.

TREMENDOUS SAVINGS

NEW PRODUCTS
CLOSE OUTS
OVER STOCKED
HARDWARE
SOFTWARE
BARGAIN PRICES
MAJOR BRAND NAMES
COMPATIBLES AND CLONES
DISCOUNTERS
PERIPHERALS
WHOLESALERS
ALL UNDER ONE ROOF!
SAVE!

► ALL SHOWS 10-5 PM
Admission $5.00 Kids 12 & under FREE

EAST-WEST COMPUTER SHOWS
(formerly Golden Gate Shows)
CALL FOR INFO: (415) 388-8893

I would like to see that sort of cooperation, as we see in Sematech, develop without risk of antitrust liability. Bear in mind that America is the only country on earth with treble damages for antitrust violations. And one of the only countries that enforces antitrust at all.

of the competition bureau in 1981 – 83 and I strongly supported that exemption.

I'm concerned that it may not even go far enough. The reason why is that the joint research and development venture act covers only research and development in *basic* research, not *applied*. And I think in a lot of what we do in electronics it's hard to distinguish the basic from applied. Or, I should say, that the basic moves so quickly from the basic to the applied that there is a risk of inadequate protection from antitrust laws.

I would like to see that sort of cooperation, as we see in Sematech, develop without risk of antitrust liability. Bear in mind that America is the only country on earth with treble damages for antitrust violations, and one of the only countries that enforces antitrust at all.

Should government, then, not only provide R&D tax breaks but also directly subsidize certain forms of research and development?

Through the R&D tax credit there is a subsidy. What I like about it is it gives individual entrepreneurs the choice of as where the R&D is going to go. I am quite hesitant to entrust government — one of the reasons I'm a Republican — as the repository of knowledge and wisdom as to where research ought to be. There are specific areas, of course, where defense needs require research. But if you were speaking about an industrial policy whereby a group of government officials would decide which start ups in Silicon Valley are worth 4-1/2% money, I'd be very, very scared. I'd be scared they would not make the right choice, that they would not do a better job at guessing than the market would, and that sooner or later politics would intervene in the choices made.

Are there any strategies that are employed in the East that you would like to see used here? Or do you think the market can handle the choices that need to be made?

We are large enough that the market can provide incentives and capital for virtually all the innovation that is likely to come about. Particularly when you recognize that so much innovation comes from small scale startups — oftentimes then acquired by larger companies, but they start on the small scale.

Other aspects of the American economy that are unique include the tremendous access to capital; there is no rationing of credit the way there is in most other countries, such as MITI's role with the banks in Japan. We have a large enough market so that we can achieve economies of scale and still have antitrust laws, whereas that's not true for Pacific Rim countries like Australia and New Zealand.

Their getting a scale economy will virtually guarantee a monopoly, because that's it, there's not enough market. Because they have that problem, they claim to need government regulation to foster the monopoly and then make sure it doesn't gouge consumers. I would not trade the free market incentive structure for raising capital and directing it towards its best use.

There's several things that can be done to make the American system work better, but it wouldn't be by emulating the Orient. It would be by removing disincentives, such as the fact that we tax long term capital gains at such a high rate. Which is a tremendous disincentive to put your money into a long term investment. We are virtually unique in taxing capital gains at all.

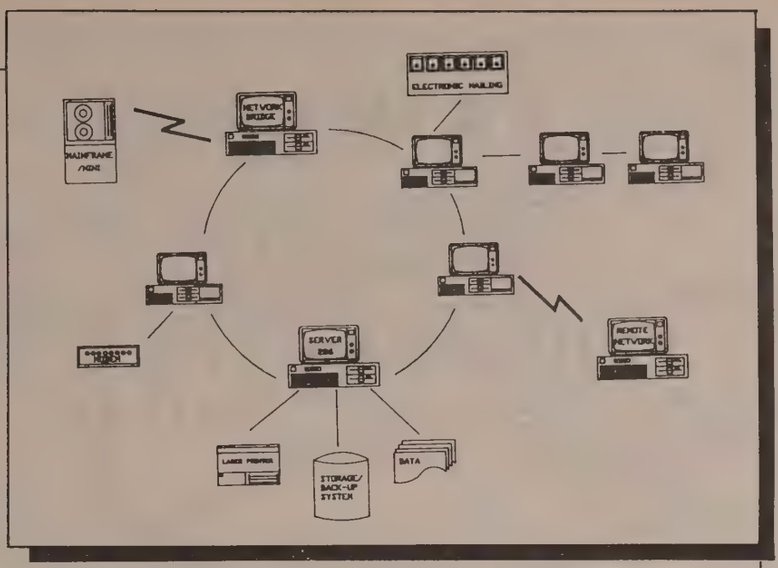
I would do a fair amount to get the tax structure out of the investment decision and let the investment decision be made on the merits, with one caveat, and that would be to try and induce a higher savings rate in the United States by preferential treatment for long term capital gains. So if you're going to have government involvement on the tax side, it should be that way. □

Share! Integrate! Coordinate!

The drums beat and beat.

As business gets larger, so the resources and information involve more, and so the heads of office managers' become bigger and bigger.

To LAN or not to LAN, that is not the question. The question is how and where to get the best solution.



So talk to us, hand your problems over to us:
Be it PC, Macintosh, Sun, Vax, or IBM;
Be it small and simple, or large and complicated.
To remove the mystery of connectivity for you is our specialty.

And because we know the products and markets so well that you will even find they, the budget controllers, be comfortably entertained.

A — We Ease The Connectivity For You

Free consultation on LAN
Various hardware/ software discounts
Installation = (1) **$35-45/Hr.**
(2) Site Bidding
Training = **$200-300** (3 Hours)

For over 40 stations ask for DAN

B — Or If You Want To Do It Yourself:

	SALE
Novell Netware Advanced 2.1	$2235
Novell Netware SFT 2.1	3545
SMC Active Hub ~~560~~	480
SMC Passive Hub	75
SMC PC-110 ARCNET Card	220
SMC Twisted Pair ARCNET Card	270
Ethernet Card	330
3 COM Etherlink	390
Cable RG-62/U 1st 25'	23
Additional Ft	20¢

C — Ethernet Complete LAN

3-node Ethernet, PC's included **$4175**

- AT Server 12 MHz, 1.5M, 40 HD, 1.2 FD, KB, Monitor, Ethernet Network Card
- 2 Diskless Ethernet Workstations
- Novell Netware ELS 286 2.0A
- 2-20 Ft. Cable
- 10M SPS Data Transmission Rate

HIGH-CAPACITY HARD DISK

Maker	Capacity (MB)	Access Time	Price ST/ESDI/SCSI
CDC	121	16.5	X/1570/1790
	155	16.5	X/1690/1840
	300	16.5	X/X/2600
Micropolis	280	18	X/2570/2760
	350	18	X/3220/3480
Priam	130	20	2190/X/X
	230	20	2350/X/X
	330	20	X/3130/X

ALLIES: NOVELL
3COM
EXCELAN
SMC
COMPAQ

Tape Backup

Everex	60 I/X, 60M, INT/EXT	625/785
Emerald	125 I/X, 125M, INT/EXT	1130/1330
	60 I/X 60M, INT/EXT	1260/1490
	120 I/X 120M, INT/EXT	1750/2140
	Vast Device 2.2GB	5600

File Servers

All file servers listed below include **1.5 M** RAM, 2 P/S, HD controller, and mono display

NAC 286—10 MHz, 0 Wait	$1240
AST 286—10 MHz, 0 Wait	1980
Compaq 286—12 MHz	2535
NAC 386—Made by Intel	2980
Compaq 386—70 M Hard Disk	5775
3Com 3Server3	4800

Workstations (Diskless, Mono Display)

Ethernet Workstation—256K	625
Arcnet Workstation—256K	640

MAKING-FRIENDS SALE

CDC Wren IV 300M, 16.5 Ms	$2300
Miniscribe 3650 40M with Disk Manager	$330
Micropolis Fast Hard Disk 72MB, 28 Ms.	$690
Priam V150 Full Height 40MB, 28 Ms	$520

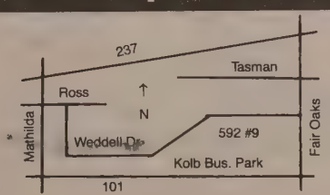
LINK YOUR PC-Macintosh-VAX-Apollo-IBM

NETWORK ASSOCIATES CORPORATION

592 Weddell Dr. #9
Sunnyvale, CA 94089
(408) 744-0631

Fax: **(408) 744-0639**

Our Job Is To Remove The Mystery of Connectivity For You



Programmer's Perspective: Entering The Parallel Universe

By Jack J. Woehr

"The parallel world is bigger, and hairier, than the sequential world."

— Michael Swaine, editorial,

Dr. Dobb's Journal, March 1988.

When I was a young man, the hot news in computers was the advent of the BASIC programming language. The idea that BASIC was the beginning of an era in which computers would inexorably draw closer and closer to thinking in the same symbols as humankind gripped computer literature. Since that innocent era, what has happened to communication between the Creator and the Device?

We have learned to talk like computers, rather than the other way around. BASIC, FORTRAN, COBOL and LISP have been replaced by FORTH, C, PASCAL, and PROLOG, with little remaining of the enthusiasm for making the machine ape our linguistic achievements. The efforts in that direction which continue, such as LOGLAN/LOJBAN, revolve around creating an unambiguous language that people can be taught for the purpose of communicating with the computer of the future.

But if the goal of teaching a machine to understand sentences like "Give me a buck, dear" has been discarded in favor of more achievable objects, there is no doubt that, in sheer thinking power, computers are orders of magnitude advanced from their state in 1964, the year BASIC appeared. Computers now fly our airplanes, guide our trains, tend our invalids, scan our internal organs, teach our children, sing us songs, provide entertainment and income, cook our food, and share our lives from dawn to dawn.

The personal computer is here, there and everywhere because it is an economic necessity. The cost of maintaining records and performing computational and device control tasks of all kinds by means of microcomputers is well below that of any other method available in the economy of the United States or the rest of the industrialized world.

Fueled by cheap microprocessors, computer science which found more ingenious ways to use them in response to the needs of users, the personal computer revolution changed the world. A revolution powered by the same forces, but radically different in its scope is once more about to engulf the computer world.

Parallel processing is coming...to *your* desk...soon!

Q: What?

A: New computer architecture that divides a task up, by means of one or more of a yet-unbounded set of processing algorithms, into slices to be handled by multiple CPUs operating concurrently.

Q: Why?

A: Speed of handling certain complex tasks in real time, and for the ability to solve certain problems of a depth too great for contemporary microcomputer architecture.

Q: How?

A: By means of new ideas, and new hardware devices that have dropped recently into cost ranges affordable by the cost-conscious microcomputer owner/operator.

Q: When?!?!?!?

A: It's hard to say with certainty, but if one's application were restricted to high-speed image processing, for instance, the answer is, it's here now.

Q: What's here now?

A: Two quick examples off the tip of the tongue are the Harris Force Board and the Inmos Transputer, discussion follows. There are others equally worthy.

What Can Be Done With Parallel Processing?

Let's start way upscale, then move back to Earth, literally.

If you happened to own a satellite and wanted to map Earth, how would you do it? Well, first you would have to get the satellite into Earth orbit — a snap! Then you would begin to photograph and send the pictures back to the ground. This makes the problem a little more complicated. The satellite is moving, blurring the pictures. Earth is moving, blurring the pictures. Earth has weather, blurring the pictures. The "ether" transmits funny today, for whatever reason, chalk it up to sunspots if you like. Result: Many, many overlapping segments of photographic mystery waiting for resolution.

Would you like to solve this one with a paste-pot and scissors? Or even with a 32-bit single-processor desktop, such as the Amiga, Mac, or PS/2?

No, what you would want is a parallel processing device that would examine and compare pixels with pixels, "voting" on most likely resolutions of obscurities and passing the group votes up to higher levels where results of concurrent operations would be merged to produce the final set of images presented at the press conference and in National Geographic.

NASA, the National Aeronautics and Space Administration, faced with that very type of computational problem, chose to explore parallel architecture. Chaining a VAX to a 128 x 128 grid of tiny one-bit processors which runs Parallel FORTH and Parallel PASCAL, they created a machine that can do 163 billion bit operations a second. "...16,384 processors are communicating simultaneously...(giving) a total aggregate data transfer rate in the array of 20 gigabytes per second...the MPP (Massively Parallel Processor) can sort 32,768 keys of 32 bits each in 13 milliseconds...No other machine to date claims to sort this fast." (From "The Massively Parallel Processor: Architecture and Application," John E. Dorband, *Journal of Forth Application and Research* Volume 5, Number 1.)

Database programmers take note!

Back on Earth, the gentle reader asserts, "I can imagine a few toy applications on my desktop. I want to do ray-tracing graphics like the Amiga Juggler in real time, instead of waiting 16 hours for one image, with weeks of wait for a ten-second animation. But aside from that, what would I use parallel processing for?"

Multitasking is a software emulation of one model of parallel processing, a rather flimsy emulation, in fact.

The author responds, "Do you like your multitasking 32-bit computer? Well, multitasking is a software emulation of one model of parallel processing, a rather flimsy emulation, in fact."

And consider: what use did you have for a personal computer in, say, 1972? That invention is the mother of necessity is axiomatic in our industrial century.

How about a spreadsheet that recalculates itself in 100 nanoseconds, every cell full of formulae? How about a multi-user system that can handle as many users as you can hook into it without noticeable degradation of performance? How about a desktop computer that can balance the national budget, run an air traffic control grid, extrapolate

SANTRON COMPUTER

20 MB TURBO XT

4.77/8 MHz Turbo Motherboard $75
256K RAM . . . . . Call
XT Style Case 27
150 Watt Power Supply 45
360K Floppy Controller. . . . 19
360K Floppy Drive (Japan Made) 69
AT Style Keyboard 45
Hi Res Monographics/ Printer Card 40
Mono Amber Monitor (720 x 348) 69
20 MB Hard Disk. 259

Complete System $750

* Every hard disk has 90 days warranty

40 MB AT 286 10 MHz

10/6 MHz Motherboard . . $310
512K RAM 120ns. . . . . Call
AT Style Case 54
200 Watt Power Supply . . . 60
Hard/Floppy Controller . . . 105
1.2 MB Floppy Drive (Japan Made) 95
AT Style Keyboard 45
Hi Res Monographics/ Printer Card 40
Mono Amber Monitor (720 x 348) 69
40 MB Hard Disk. 379

Complete System $1230

Every hard disk has 90 days warranty

386 60MB HD SYSTEM

16 MHz, 0 Wait State, 1 MB RAM (20 MHz Optional) **$2300**

386 60MB HD LCD PORTABLE

20 MHz - 0 Wait State
1 MB RAM on Board
32-Bit Slot
1.2 MB floppy disk drive
60 MB CDC Drive (28ns & Auto Park)
I/O Card
HD & FD Controller
640 x 400 Resolution
Contrast Ratio 4:1

FREE Carrying Bag

Only $3500

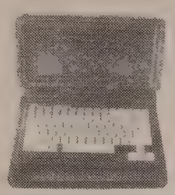
286 60 MB HD LCD PORTABLE

6/10 MHz - 0 Wait State - 286 CPU (DTK)
640K RAM on Board
60 MB CDC Drive (28ns & Auto Park)
I/O Card
HD & FD Controller
640 x 200 Resolution
640 x 400 (Optional)
Contrast Ratio 4:1
Carrying Bag (Optional)

Only $1950

10 MHZ LAPTOP

COPO SPECIAL



Gas Plasma Screen
AT 6/12 MHz Motherboard
640K
3½" 720K Drive
20 MN HD
Serial Port
Parallel Port
RGB Port
Only 9 lbs.

Only $2300

DEALER INQUIRIES WELCOME

DISK DRIVES

Teac 360KB/1.2 MB $75/95
Fujitsu 360KB/1.2MB 69/89
3½" 720KB 105
3" 1.44 MB 115

MOTHERBOARDS

8/4.77 MHz Turbo Motherboard (OK). $75
10/4.77 Turbo Motherboard (OK). . . . 90
386 16 MHz Motherboard (1 MB RAM) 1399
AT 6/10 MHz Motherboard. 310

PRINTERS

Panasonic 1091i. $225
Fortis DM 2010t 305
Fortis DM 2015t. 390
Star NX 1000 185

MONITORS

Amber Monitor (720 x 348) $69
14" DM-14 Amber Monitor (720 x 348) 125
Color Monitor (640 x 260). 249
EGA Monitor 359
(14" Non glare & RGB/Amber/Green Switchable)
Mitsubishi Diamond Scan (800 x 560). 515
Magnavox (920 x 580) 535

HARD DISKS

20 MB (Kit). $259
30 MB (Kit) 289
40 MB (Half Height) 399
40 MB (Full Height) 459

ADD ON BOARDS

Multi I/O Card $55
Monographic and I/O + Card 95
AT I/O Card. 55
AT W.D. Floppy/Hard Controller. 125
EEMS RAM Card 2 MB. 115
Monographics Card w/ Printer Port. . . 45
Color Graphics Card w/ Printer Port . . 45
EGA Card w/ Printer Port 125
Floppy Controller Card 19

NEW PRODUCTS

Tower Case Available. . . . . Call

We Upgrade & Repair Computers
Call For Your FREE Estimate
We Wholesale Products

San Francisco
446 Taraval
(Between 14th and 15th Ave.)
San Francisco, CA 94116

(415) 753-3559
FAX (415) 566-3734

Call for a list of our other products!

Hours: Mon-Sat 10-7
Prices subject to change without notice
Sale prices apply to stock on hand.

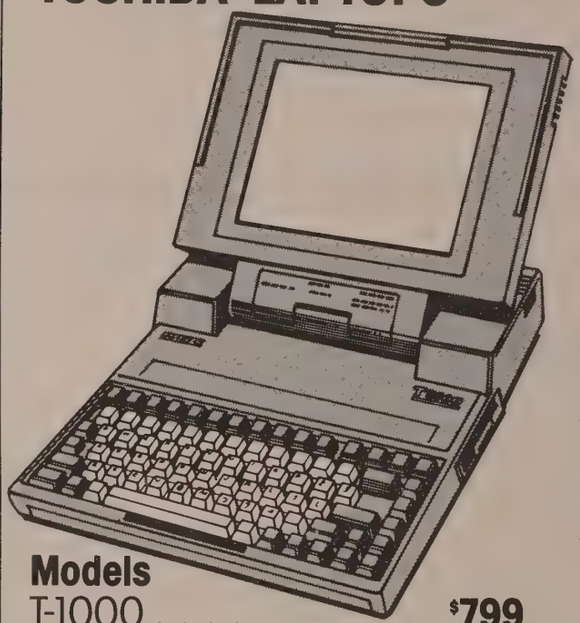
New Branch-East Bay
2233 San Pablo Ave.
Berkeley, CA 94702

(415) 848-7100

A System That Fits Your Budget or Lease It For Your Business

SYSTEM CONFIGURATIONS	386 SYSTEM $1899	286 SYSTEM $799	TURBO XT SYSTEM $399
Speed	16/8Mhz	10/6Mhz, 0 Wait State	8/4.77Mhz
Memory on Board	512K Expandable to 8MB	512K Expandable to 1MB	256K Expandable to 640K
Disk Controller	Hard & Floppy Controller	1.2MB/720K/360K Controller	360K Floppy Controller
Drive	1.2MB Floppy Drive	1.2MB Floppy Drive	360K Floppy Drive
Power Supply	200 Watt	200 Watt	150 Watt
Co-processor Socket	80387/80287	80287	8087
Keyboard	Enhanced Style	AT Style	AT Style
Expansion Slots	8	8	8
Real Time Clock	Built-in	Built-in	Option
LED Lights	Power, Hard Disk, Turbo	Power, Hard Disk, Turbo	Option
Drive Opening	3	3	4
Video Card	Option	Color or Monographic	Color or Monographic
Warranty	1 Year	1 Year	1 Year
	20Mhz System With 2 MB RAM $2250	12Mhz System $999	12Mhz System $459

TOSHIBA LAPTOPS



Models

T-1000	$799
T-1200	2495
T-3100/20	3295
T-3200	3995
T-5100	5295

SYSTEM BOARDS

386 (20 Mhz) 2 MB RAM	$1950
286 (12/6Mhz)	350
286 (10/6Mhz)	285
Turbo XT (8/4.77Mhz)	80
Turbo XT (12/4.77Mhz)	95

INTERFACE CARDS

XT Multi I/O	$57
XT Floppy Controller	21
1.2MB Floppy Controller	50
XT Hard Disk Controller	65
XT RLL Hard Disk Controller	75
AT Hard/Floppy Controller	125
RS-232	30
Printer Card	20
Game/Time Card	35
AT I/O	55

MONITORS

Mono	$75
Color	250
EGA	350
Thomson Multi-scan	439
Nanao 8060S	CALL
NEC	Call

VIDEO & RAM CARDS

Monographic/printer	$45
Color Graphic	40
Color Graphic/printer	45
EGA/HGC/132 col. (640x480)	149
Genoa Super EGA (800x600)	185
XT 2MB EMS Card (OK)	85
AT 2MB EMS Card (OK)	95

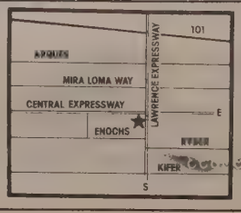
DRIVES & MISC.

1.2MB Floppy Drive	$95
360K Floppy Drive	72
720K 3½" Drive	Call
1.44MB 3½" Drive	Call
20MB Hard Disk ST-225	Call
30MB Hard Disk ST-238	Call
40MB Hard Disk ST-251	379
80MB Hard Disk ST-4096	769
Math Coprocessor	Low
Mouse	60
AT/XT Keyboard	49
Enhanced Keyboard	60
150W Power Supply	49
200W Power Supply	69
Modems 1200B/2400B	Call
Printers	Call

386 Your XT/AT With an INTEL 386 Motherboard

Limited Quantity Available $1250

MONTHLY SPECIAL
EGA CARD
(640x350)
$99



YOU WILL LIKE OUR SERVICES

JOINTEK (408) 746-3976

3080 Lawrence Expressway, Santa Clara, CA 95051

Prices subject to change without notice

weather patterns into the next century, and which will cost, relatively, no more (when it finally makes its appearance in the middle of the next decade) than your current desktop did when it was new?

"Hot stuff," says gentle reader, "but baked goods in the stratosphere apparently. What exists that I can buy today?"

What's Available Now

FORTH programming environment aficionados rejoiced some years back when Chuck Moore, the father of FORTH, introduced the Novix 16-bit Forth microprocessor. For a while Novix itself had somewhat less reason to rejoice, since making a CPU dedicated to one particular narrowly-appreciated programming philosophy commercially viable was, to understate the case, difficult. While Novix managed to sell enough chips to avoid having to hock its socks, the Novix 4016 itself languished.

Third-party developers then began to appreciate that the holistic environment provided by FORTH was ideal for exploring the brave new world of largely unsolved parallel algorithms. Soon various board builders began dropping multiple Novix cards into IBM PCs for rapid image processing, a practice roughly comparable to lifting the hood of a Model T and installing a nuclear power plant.

Soon various board builders began dropping multiple Novix cards into IBM PCs for rapid image processing, a practice roughly comparable to lifting the hood of a Model T and installing a nuclear power plant.

Now the Harris Semiconductor Company has bought rights to produce the latest incarnation of Chuck Moore's dream chip and is attempting to emerge as the master of the parallel universe, offering boards, programming toolboxes, and corporate enthusiasm and support to intrepid souls attempting to transfer this largely unexplored domain to the realm of desktop commonality. Their concept is largely based, to date, on sharing memory with a conventional desktop computer, combined with the flexibility of the interpretive FORTH language.

Harris claims 10 to 20 MIPS steady throughput, with up to 30 Million Instructions Per Second peak.

The Harris Force Board, advertised in the January/February issue of *FORTH Dimensions* magazine, was priced at $4,995. We wish Harris good luck in its venture, having seen mandelbrots calculated by these devices in the wink of an eye. We estimate that price of such devices will be well under $2000 within two years, making them no more expensive than, say, a fancy hard disk and virtual disk combo.

More established in the parallel universe and firmly committed to continued development of multiple concurrent processing is Inmos Corporation's entry, the Transputer. Designed ground-up for parallel processing, the transputer comes in three "flavors" — the 16-bit T212. the 32-bit T414, and the T800, a 32-bit T414 plus an integral high-speed floating-point processor.

The Inmos Transputer sports a high-level programming language called OCCAM, specifically engineered for the parallel environment. The Transputer can also currently be programmed in C, PASCAL and FORTRAN, with hooks to its native OCCAM, though Inmos asserts that the Transputer in parallel can be most effectively exploited through OCCAM.

The T414 chip sold for $600 in 1984 but is down to $200 in 1988. An unpopulated board designed to hold up to ten Transputers can be purchased from Inmos for $1,800, and with one Transputer on board and a complete development system, OCCAM, toolbox and documentation for $4,500.

Let's see...for the price of a PS/2, you could finish populating that 10-socket board...

Besides, as we programmers never tire of saying, the realm of the parallel algorithm is terra nova, new earth, barely explored. You the consumer will be the impetus for the development of useful stuff, in this region of the computational universe as you have been in every other case. We programmers are still mostly guessing when it comes to parallel. □

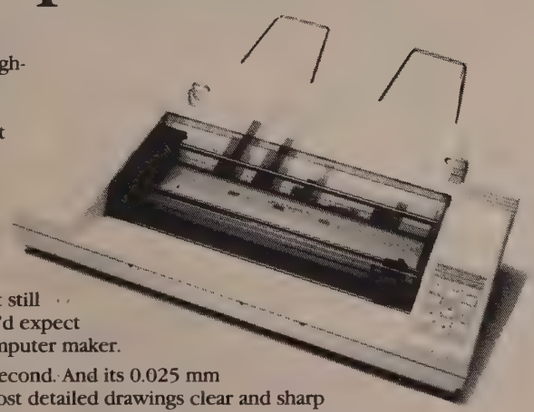
Copyright © by Jack Woehr. All rights reserved.
Jack Woehr is a Forth programmer at VESTA Technology, Inc., 7100 W. 44th Ave, Wheat Ridge, CO 80033, but prefers to be reached via electronic mail at the Well (well!jaxlll-crg.arpa) or as JAX on GEnie. He received kind assistance from Steve Wheeler, email S.WHEELER on GEnie, and Dr. Daniel Miller, email DAN-MILLER on GEnie.

FUJITSU

FUJITSU

COMPONENT OF AMERICA, INC.

ImageGraph



Here's the one high-speed, high-resolution color plotter that looks as good as it draws. It's the new compact, lightweight ImageGraph from Fujitsu. At only 420 x 260 mm, it takes up barely half the desk space of its biggest competitor. And it's nearly one-third lighter.

But with all its fat trimmed, it still has the rugged reliability you'd expect from Japan's number one computer maker.

It's fast, too; up to 250 mm/second. And its 0.025 mm resolution makes even the most detailed drawings clear and sharp - on any size paper from postcard size to A3. Transparencies, too.

Best of all, Fujitsu's ImageGraph is compatible with the world's most popular graphics language.

SPECIFICATIONS

	FPG-315-101
Paper size	From A3 to post-card size
Applicable paper	Normal paper (thickness 50 ~ 200 μm), overhead transparent film, etc.
Plotting area	276 x 399 mm max.
Plotting speed	250 mm/sec in the X- or Y-axis direction
Pen up/down	10 cycles/sec
Resolution	0.025 mm
Accuracy	
Length	(Plotted length x 0.5%) + 0.3 mm max.
Repeat	0.1 mm max. without changing pens 0.2 mm max. with changing pens
Perpendicular	0.5 mm/200 mm max.
Color of pens	6 colors (black, red, blue, geen, violet and orange)
Type of pens	Water-based ink ball point pen and oil-based ink plastic tip pen
Dimensions	420 x 260 x 95 mm
Weight	4.5 kg (approx.)
Interface	Centronics interface (7 or 8 bit parallel) and RS-232C interface (serial)

Cypress Distributing Company

560 Lincoln Avenue
San Jose, CA 95126
(408) 297-9800

22186 Rim Pointe
El Torro, CA 92630
(714) 770-7244

2670 Truxel Road
Sacramento, CA 95833
(916) 646-1955

(Outside CA) 1-800-344-3044

Dell System 300 Computer

By David Garfinkel

Would you buy a mail-order computer from this man?

This man, of course, is Michael Dell, the legendary Texas college dropout who founded PC's Limited, now Dell Computer, a direct-ship computer company in Austin. His business and technical accomplishments have been the subject of much praise inside and outside the computer industry.

Whether you would buy a computer from him would depend on whether you would buy a computer from *anyone* who is 2,000 miles away. If the answer is yes, then, by all means, give this one serious consideration.

Dell has a reputation for high-quality engineering and good prices. My experience with this machine, and the model which preceded it (the 386-16), bears out this reputation; a speedy 16 MHz 80386 processor, zero-wait-state static RAM and an all-items-included price of $3299. Most people will find this an attractive buy.

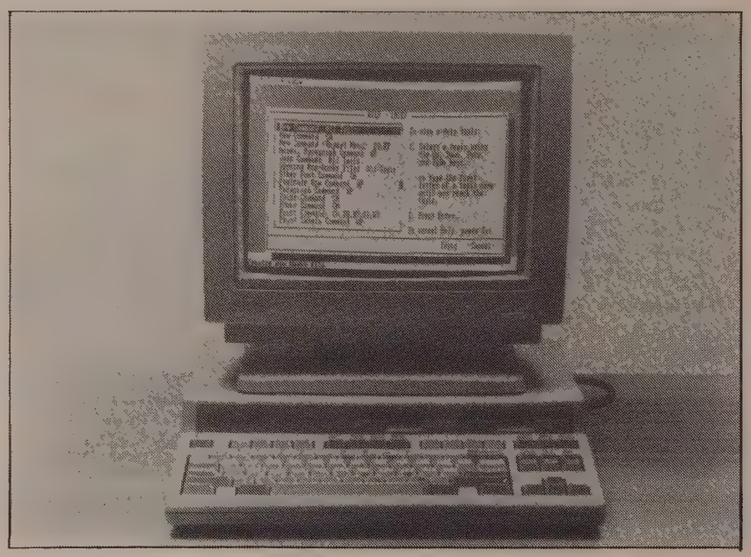
But are the computer's processing speed and price tag the real issues in the hearts of desktop devotees — especially after you've bought it? Of course you want to compare features and prices before you buy. Afterwards, I doubt most computer users stand around their machines all day with stopwatches and pocket calculators, timing benchmarks and tallying price-performance ratios.

It seems to me that once you've laid your cash down and got the computer on your desk, the main things you're concerned about go something like this: How easy is this thing to set up? How hard is it going to be to figure out how to use it? What in the world am I going to do if something goes wrong?

After all, most people use their computers as a workhorse, not a racehorse. And this, I feel, is where the System 300 excels.

Easy Setup, Free Support

I asked my friend, financial consultant Greg Phelps, to help me set the machine up, straight out of the three



sealed boxes delivered to me UPS from Austin, Texas. I did this for two reasons: first, even though I've put four PC-compatibles together before and I know how to do it, I don't like to; and, secondly, my friend Greg doesn't spend as much time around computers as I do. Thus, he would give us a better idea of what a typical customer would have to go through.

It was no ordeal for him at all. He had it out of the box and running off the floppy system disk in 15 or 20 minutes.

I took it on from that point. Later in the day, by simply following the admirably clear instructions provided with the computer, I was able to partition and format the 40-megabyte hard drive in about half an hour. At this point, theoretically, the computer should have been running. Then, I had a real-life problem.

As I was trying to boot the computer from the fixed disk, the ominous message "hard disk failure, strike F1 to continue, strike F2 to run setup utility" came on the screen.

It wasn't booting, and I wasn't clear on what I was supposed to do to make it work. So I called the Dell toll-free technical support line. A receptionist took a message. No one called right away. I called back an hour later and got straight through. The technical support specialist patiently and knowledgeably walked me through the set-up program, had me change some numbers, and we had the machine working well in about five minutes. (My original call was returned 2 1/2 hours later.)

This toll-free advice is one of the nicest standard features with the computer. Free technical support, five days a week, no questions asked, for as long as you want. That's hard to get from a lot of mail-order companies, as well as from many dealers.

One reason I'd hesitate to buy a computer from the Lone Star state, or anywhere else more than a comfortable drive away, is that the machine might break down and I'd be stuck with it. This eventuality is neatly answered by a one-year on-site next-day service contract with Honeywell-Bull nationwide, included in the price of the computer. (That means they will come to you and fix it for free.) I didn't have a chance, or, in other words, the need, to test that out, but it's reassuring to know that if something broke down that I couldn't handle, a repair person would supposedly show up within 24 hours and the clock would not be ticking against *my* checkbook.

Options

Of course, you may be interested in the specifics of this machine. It's got a lot to offer as standard equipment: 40-megabyte hard drive, clock, 5-1/4" or 3-1/2" (or you can get both as an option); parallel port, two serial ports, one megabyte RAM, monochrome card and monitor — what you'd expect from a reputable 386 machine.

There are three other monitor choices and three other hard-disk sizes. The basic system, at $3,299, costs $7,199 when it's fully loaded with the 322-meg hard disk and a VGA color monitor.

Dell Computer announced in early April that it had released its own version of Microsoft's OS/2 operating system. This means the computer will run as close to all new OS/2-based software without getting so close to IBM proprietary designs as to get burned.

Early this spring, Dell took $1,000 off the prices of this line of computers, keeping its 386-based machines very price competitive. For a while this computer's predecessor, the 386-16, was the fastest box on the block. While it is still close to the top technically, its slip from the number-one spot and a fiercely competitive market in PC-compatibles have kept its manufacturer holding the line on price.

So the bottom line is this: If you want the warm and fuzzy feeling of your local computer dealer to stay with you throughout your computing day, steer clear of this computer. You can't buy it from a dealer; you can only buy it by phone from Texas.

But if you're prepared to take the step of buying a very powerful computer via mail order — which seems a safe step in view of my experience — then you've got quite a value in the Dell System 300. And if you don't like it, you can send it back for a full refund for up to 30 days. So suit yourself. (Dell Computer, 512/338-4400) □

Copyright © 1988 by David Garfinkel. All rights reserved. *David Garfinkel coaches people to write more powerfully. He has been published more than 1,000 times in magazines and newspapers. He coaches Power Writing for business people and Writing for Publication for authors. You may reach him via MCI Mail or by telephone at (415) 928-6318.*

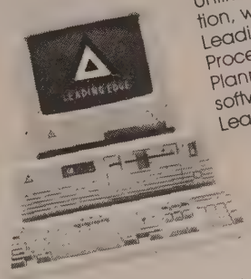
We Have It All...

Largest software selection in the world
Everything for APPLE, IBM, ATARI, AMIGA, EPSON

THE NEW
LEADING EDGE SUPER SPEED D2 COMPUTER IN STOCK NOW

LEADING EDGE®

Featuring:
- 80286 (6, 8 and 10 MHz)
- 1.2MB disk drive
- Six full-sized expansion slots
- Parallel and serial ports
- 640K RAM exp. to 1MB
- EGA, CGA, MDA, and Hercules graphics emulation with automatic mode switching
- 101-key keyboard
- MS-DOS 3.2 and GW BASIC 3.2
- 40 & 60mg fast access drives in stock now



Unlike the competition, we include Leading Edge Word Processor and VP Planner spreadsheet software with all Leading Edge systems.

LEADING EDGE #1 NEVER UNDERSOLD

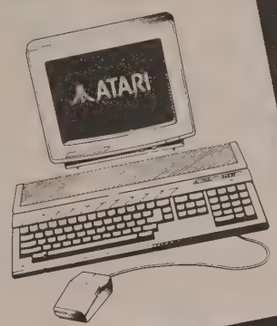
Leading Edge and Logo and Model "D" are registered trademarks of Leading Edge Products, Inc
Authorized Leading Edge Repair Center—all parts in stock

Leading Edge Model D in stock now.

ATARI Authorized Business Center

Atari 1040ST monochrome system	$787.00
Atari 1040ST color system	987.00
*Atari Mega ST 2 monochrome system	1700.00
*Atari Mega ST 2 color system	1900.00
*Atari Mega ST 4 monochrome system	2400.00
*Atari Mega ST 4 color system	2600.00
*Atari SLM 804 laser printer	2000.00

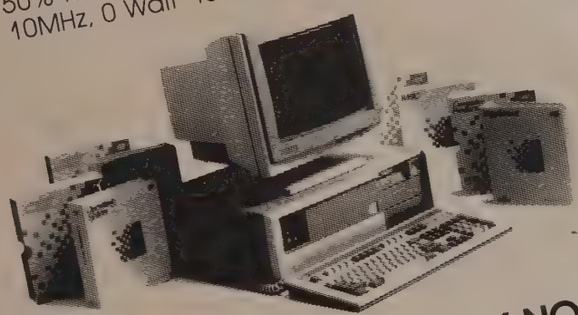
*Price includes a word processor, spreadsheet, database software packages and training.



ATARI Atari Authorized Business Center

AST PREMIUM/286

#1 RATED AT,
"EDITOR'S CHOICE P.C. MAGAZINE"
50% faster than the 8 MHz IBM PC AT.
10MHz, 0 Wait 100% Compatible



AST® RESEARCH INC.

IN STOCK NOW
Authorized Retail Dealer

All Computer sales include free training.
Authorized service & repair.

COMMODORE AMIGA 500 & 2000

Both in stock
Lowest price available

- Motorola 68000, 16/32 bit CPU comes with built-in disk drive, keyboard, mouse, power cable, documentation and system software
- IBM PC compatible
- Standard 1MB RAM expandable to 9MB
- Multi-tasking operating system
- 4 voice 2 channel sound output with built-in speech
- 5 Amiga™ expansion slots, 4 IBM-PC® expansion slots, 2 special purpose expansion slots
- 4096 available colors

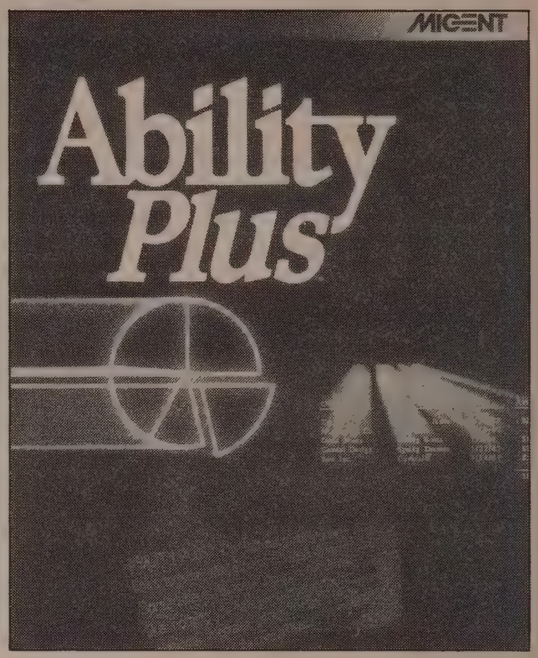
COMMODORE AMIGA™
Authorized Amiga Dealer

30% off retail on all Amiga software with purchase of system through May 31st.

WINNERS CIRCLE SYSTEMS

2618 Telegraph Ave. • Berkeley, California • 845-4814
Authorized Corporate & Institutional Dealer

Ability Plus, The All-In-One Program



By Ed Kahn

While each of the modules is not as good as the industry leaders in the stand-alone programs, each is tolerably good and so easy to use with Migent's unified command structure that the shortcomings are worth it for many tasks.

Beginning computer users often ask what kind of software they should buy. I'm talking about the people who have just purchased an inexpensive IBM clone for their business or home and want to be able to do the basic chores: word processing, an occasional spreadsheet, maybe some database work, an occasional graph and perhaps some communications work. Answering their question should be easy, but it rarely is.

Obviously an all-in-one program will not excel at each of the tasks. That doesn't bother me. But more serious is the fact that the user will have his or her files in a unique format. Once Mr. or Ms. Newuser gets into the work, it is likely that more high-powered software will replace some parts of the beginning package. Then, how will the old files get converted into a new format?

Migent Software has had various releases of *Ability* on the market for some time. With the release of *Ability Plus*, which they continue to improve, they have a program which I can now recommend to the beginner—and the more advanced user as well.

While each of the modules is not as good as the industry leaders in the standalone programs, each is tolerably good and so easy to use with Migent's unified command structure that the shortcomings are worth it for many task.

Ability Modules

As a writer, the module I use the least is *Write*. But for a person whose primary interest in not writing, it is quite acceptable. It does all of the basics that you would expect from a word processor and then some. It includes a spelling checker and, like all of the modules, has a macro facility that allows you to designate a special key or combination of keys to do an often-repeated task, such as typing a return address, changing a format or even inserting a boilerplate paragraph. It is easy to move text around, underline, create headers and footers and take advantage of all of the other conveniences that win people away from typewriters.

None of the basic tasks that should be included in a word processor is missing. Even mathematical calculations can be performed in a text document, much as you might do with a spreadsheet. And the program allows you to work with two windows at the same time. You can split the screen either vertically or horizontally and have two parts of the same document or two different documents in the windows. If you scroll, you can choose to have either window or both windows scroll simultaneously.

But the thing that sets the *Ability Plus* Write module apart from the competition is the ease with which you can import other documents into an *Ability Plus* file. Not only can you move spreadsheets and graphs created in *Ability Plus* into a text file, but you can also bring in documents created by *WordStar, PeachText, WordPerfect, MultiMate* and ASCII-based word processors. This means that using *Ability Plus* does not isolate you from the rest of the word processing world. Migent has made it easy for *Ability Plus* users to exchange files with other people. All in all, it is a pretty sophisticated word processor when you consider that this is just one module of a package that is available through discount software outlets for less than $150.

Although *Ability Plus* will do all of these things, I find it a bit more cumbersome than some of the more powerful stand-alone word processors. The system is based on menus, printed at the bottom of the screen. A bar across the the display lists the various options available with the corresponding function keys. When you press one of the keys, the menu changes to the next level of choices and so on until you complete the task you want. Throughout the various modules, these function keys remain fairly constant. For instance, anywhere within *Ability Plus*, you can press F1 and get help for the choices facing you. You can get back to your work by pressing Esc. F4 will always let you edit material and so forth throughout all of the parts of the program.

The Spreadsheet module, likewise, does all of the standard things you might expect from such a program. Like the Write module, it offers you the option of working in two windows simultaneously. And while the program is not a substitute for Lotus, it will allow you to import and export spreadsheets to and from *1-2-3*. You are limited, however, to version 1A. If you use version 2 of *Lotus*, you must translate spreadsheets within that program to the 1A format before moving the work into *Ability Plus*.

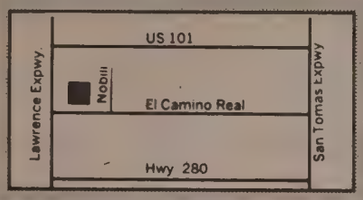
Nevertheless, this feature does allow you to not be locked into *Ability Plus* forever. Within *Ability Plus*, you can place your spreadsheets in a Write document; you can also move information back and forth between spreadsheets and databases.

For the occasional use of a database, the *Ability Plus* module is a real winner. Compared to most other programs, it is easy to use even though it is a real relational database. In addition to being able to shift material back and forth between the *Ability Plus* modules, you can import and export files created with *dBASE II, dBASE III*, and *dBASE III Plus*.

While it is impossible to compare the power of this database to that of the more powerful programs with their own programming languages, most of what this module can do it does well. It is fast and accurate. I imported a large *dBASE* file into this program and it worked without a hitch.

There are, however, still some problems to be worked out, and I assume from past performance that the folks at Migent are working to correct them. When I exported data from an *Ability Plus* file into a text file by using the easy mail-merge function, extra spaces were inserted in some of the data. There are other similar glitches, but the ease of operation far overshadows these drawbacks.

One of the features that I most like about the whole package is the mail-merge. It is so simple that for the first time in my life, I actually find it worthwhile to use even if I have only a few documents to process. Recently, I needed to send a letter to six people. Normally, it is not worth getting out all of the documentation and



ACCESS
COMPUTER TECHNOLOGIES

3393 El Camino Real, Santa Clara, CA 95051

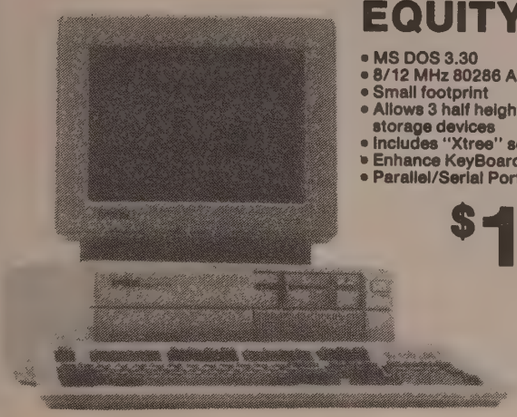
(408) 247-4444
OPEN 7 DAYS
MON.-FRI. 10 A.M.-8 P.M.
SAT.-SUN. 10 A.M.-6 P.M.
Prices subject to change without prior notice.
VISA Price subject to change w/o notice. Exp. exp. 6/3/88

EQUITY™ II+ PERSONAL COMPUTER

Your Authorized EPSON Dealer

EQUITY LT LAPTOP COMPUTER

EQUITY™ II+ | EPSON COMPUTERS | EQUITY LT™



EQUITY II+

- MS DOS 3.30
- 8/12 MHz 80286 AT
- Small footprint
- Allows 3 half height storage devices
- Includes "Xtree" software
- Enhance KeyBoard
- Parallel/Serial Port

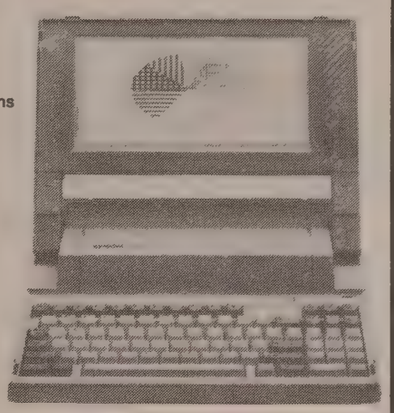
$1295

NOW AVAILABLE AT YOUR ACCESS

EQUITY LT

- 80% of 286 speed (V30)
- Choice of two displays
- Separate numeric keypad
- 2 drive or 20MB configurations
- Includes "Xtree" software
- MS DOS 3.2
- Parallel/Serial Port
- RGB Graphic Card

$1295



Monitors/Graphics

GENOA SUPER VGA	289
PARADISE VGA	275
VEGA VGA	289
EVEREX VGA	259
NEC MVA1024X768	889
GENOA Super EGA HI-RES+	189
EVEREX 800X600	169
PARADISE EGA480	179
ATI EGA WONDER	189
EVEREX EGA480	139
NEC MULTISYNC XL 19"	1999
NEC MULTISYNC PLUS	899
NEC MULTISYNC II	575
NEC MULTISYNC GS	229
SONY MULTISCAN 1302	629
SONY MULTISCAN 1303	535
MITSUBISHI DIAMONDSCAN	529
CASPER EGA MONITOR	349
SAMSUNG RGB COLOR	225
SAMSUNG HI-RES MONOCHROME	75

EVEREX PRODUCT

AT EMS 10MB	149
PS/2 EMS 4MB	289
AT EMS 3MB	99
XT EMS 2MB	79
MODEM 1200BPS Int	79
2400BPS MODEM INT/EXT	169/199
POCKET MODEM	129
4800 BPS FAX MODEM	359

SOFTWARE

SIDEKICK PLUS	139
M.S. QUICK C	74
Dbase III Plus Lan Pak	559
LOTUS Hal	69
FRAMEWORK II	359
PARADOX 2.0	329
Q&A	179

Free "DOS Step by Step" with Systems

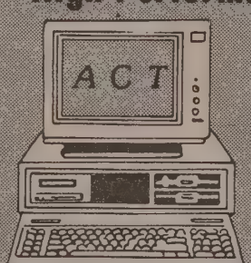
The most Powerful 20 MHz 80386

20 MHz Hi-Speed with EGA 640x480 on Board
1 MB RAM On Board expandable to 2MB
2 parallel and 2 serial ports on Board
Western Digital WAII, Floppy & Hard Disk Controller
Teac, 1.2MB Floppy Drive
80387 & 80287 Sockets on Board
Keytronics Enhanced Keyboard

Landmark=26.7
Norton Si=22

New
$2299

High Performance 16MHz AT 0 Wait State



- Western Digital WA2 Controller
- Teac 1.2 MB Floppy Drive
- 512K Memory Expandable to 1MB
- AT Style Keyboard
- Mono Graphic Card with Printer Port
- Mono Monitor
- 1 Year Warranty

New
$1195

12 MHz Complete System
0 Wait State **$1029**

10 MHz Complete System
0 Wait State **$929**

10 MHz XT Mono System Turbo-10

- Teac 360K Drive
- 256K Memory
- AT Style Keyboard
- MGP Card
- Mono Monitor
- 1 Year Warranty

$489

Seagate

20 MB w/Controller	$259
30 MB w/RLL Controller	289
40 MB ST 251 38ms	399
40 MB ST 251-1 28ms	499
40 MB ST 4053 28ms	499
60 MB ST 277 RLL 38ms	499
80 MB ST 4096 28ms	729

All Drives Come with Software

MiniScribe Hard Disk

40 MB Min 3650	$345
40 MB 6053 28 ms	599
72 MB 6085 28 ms	795

Everex Tape Backup

Teac 40 MB Int/Ext	$495/565
Teac 60 MB int/Ext	539/629
Archive 40 MB Int/Ext	335/649
Wangtec 60MB Int/Ext	689/789

All Printers on Sale

EPSON

	Free Printer Cable
LX800	$199
FX86e	329
FX286e	399
EX800 300CPS	429
EX1000 300CPS	529
LQ500 24-PIN	379
LQ850 24-PIN	529
LQ1050 24-PIN, 132 COL.	729
LQ2500 24-PIN, 132 COL.	829

Panasonic

KX-1091i M2	$219
KX-1092i	329
KX-1524 24-PIN. 132 COL.	529

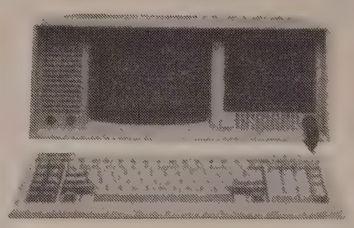
FUJITSU **DL3400**
24 pin. 132 col.
Color Option **$599**

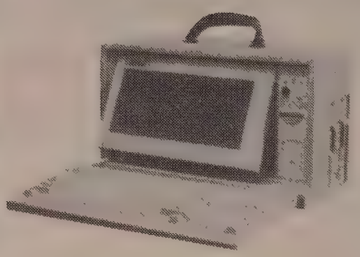
NEC P2200
24 Pin Tractor Incl. **$345**

Star Micronics NX-1000 Multifont Printer **Color $269**

LaserJet series II
HEWLETT PACKARD
Cash & Carry **$1665**

Songtech International, Inc.





CRT-PORTABLE

LCD-PORTABLE

BASIC UNIT SYSTEMS OR KIT:

Desk-top 8088-XT Basic unit	$595
Desk-top 80286-AT Basic unit	$895
CRT portable kit for XT	$360
CRT portable kit for AT	$380
CRT portable XT Basic unit	$799
CRT portable AT Basic unit	$1295
LCD portable kit for AT & XT	$599
LCD portable XT Basic unit	$1070
LCD portable AT Basic unit	$1370

CARDS AND PARTS:

Turbo Motherboard (OK)	$80
AT-80286 Motherboard (OK)	$280
Math Coprocessor 80287-8	$235
Math Coprocessor 80287-10	$275
Math Coprocessor 8087-2	$155
41256, 4164 chips	Call
Monochrome Graphic printer card	$40
Color Graphic printer card	$50
EGA card	$129
576K RAMbank (OK)	$35
Copy II PC option copy card	$69
2MB RAMbank for XT (OK)	$90
2MB RAMbank for AT (OK)	$105
Floppy disk drive (360K)	$68
Floppy disk drive (1.2MB)	$80
3½" floppy disk drive with kit (720K)	$99
20MB drive w/controller	$285
30MB drive w/controller	$315
40MB drive	$385
Keyboard for XT and AT	$50
1200BPS Modem	$75
2400BPS Modem	$169
EPROM Programmer	$80
EPROM Eraser w/timer	$95
IC Tester	$85
PAL programmer	$239

LOGIMOUSE SPECIAL:

Logitech Serial Mouse C7	$69
Bus Mouse	$78
PC Paintbrush	$19
Publisher mouse	$109
Optimouse w/Dr. Halo	$99
Logicadd	$45

PLEASE CALL FOR MANY, MANY MORE PRODUCTS...
VISA, MC AND CHECK ACCEPTED.
DEALERS, DISTRIBUTORS, VOLUME PURCHASES, CORPORATION PURCHASE WELCOME

4588 Peralta Blvd., Suite 15
Fremont, CA 94536 • **415-794-9864** • **415-794-9867**

Oakland's Full-Service
Corporate Computer Center

Computer Centrum

Clearance Sale

	Reg.	Sale
LaserWriter Plus Printer	$5299	$2500
Mac SE20 w/standard keyboard	$3698	$2599
Macintosh Plus	$1799	$1549
Apple 3.5 Drive, 800K	$ 399	$ 269
Apple IIGS color system w/3.5 drive	$1897	$1399
Apple IIe color system w/2 5¼" drives	$1856	$1299
Apple IIc Mono system	$ 928	$ 799

Authorized Dealer

	Reg.	Sale
Apple IIe Extended 80 column Text Card	$ 100	$ 75
Apple II Super Serial Card	$ 139	$ 99
Apple Tape Backup 40SC	$1499	$1099
Apple Personal Modem	$ 399	$ 269
Assorted Apple Cables		30% Off

Apple, Apple Logo and Macintosh are registered trademarks of Apple Computer.

1924 Franklin (in Downtown Oakland)
M-F 9-5, Sat. 10-5 (415) 465-4800

The thing that sets the Ability Plus Write module apart from the competition is the ease with which you can import other documents into an Ability Plus file.

figuring out how to do this for a one-shot deal. But with *Ability Plus*, it is effortless.

The communications module of *Ability Plus* is also as simple as these programs get. Set-up screens require you to supply all of the technical information about your modem and all of the parameters you will need to define in order to get on-line. But once you have worked your way through these stumbling blocks—which you will find no matter what software you use—communicating through a modem is pretty straightforward. Although the program will work with most combinations of software on the other end, it has been designed to work best when both you and the person with whom you are communicating are both using *Ability Plus*. The documentation is good and is as easy as that of any communications program. Included with the *Ability Plus* package are introductory offers from both CompuServe and The Source which will let you try out both services before you spend any additional money.

A graph module allows information to be presented graphically. As we might expect, the whole range of graph types is available from bar, to pie. All together you have a choice of five kinds of graphs from which to choose. There is nothing especially noteworthy about this module, but it does what it is supposed to do flawlessly. Information can be put directly into graphs or it can be drawn from *Ability Plus* spreadsheets or databases. As you change the information upon which the graph is based, the visual representation will change to reflect the modified data. You can store the graphs as files or output them through either a printer or plotter. If you use a plotter, you will be able to assign colors to the different components of the graph.

While one might choose a product like *Ability Plus* because of its versatility, ease of use, or economy, another reason for considering an integrated program is because of the ease with which the various elements of the program are interrelated. In standalone programs, for instance, it is much more difficult to link graphs, databases, and spreadsheets together. In *Ability Plus* it is relatively simple. If, for instance, you compose a report that includes a part of a spreadsheet, you can set things up so that the report will automatically include the latest changes you make in the spreadsheet. Likewise, other modules can be made to interrelate just as easily.

A final unit of *Ability Plus* is Presentation, a module that allows you to make up a presentation composed of snapshots of individual screens from various applications that you have developed. Thus, you can make a presentation which will display a document for a few seconds, then move onto a graph, and finally a spreadsheet or report. Like a slide show, each screen will be displayed and then move on to the next shot. There is even an attempt at music between the displays.

The use of Presentation is limited. The weakest element of this module is that, like in the rest of *Ability Plus*, color is not fully supported. For the most part, even if you have a sophisticated computer system that can handle high resolution graphics, *Ability Plus* works in a monochrome mode. In terms of getting the job done, it is certainly adequate. But in this day when so many programs support color displays, it is a bit of a surprise to find a program of this sophistication that pretty much ignores color.

To round out the package, *Ability Plus* has a fun little tutorial that does utilize color. The outstanding thing about the learning module is that unlike so many simulations, the *Ability Plus* tutorial runs the actual program and instructs you from boxes superimposed over the application. So even though the instructions do not go into great detail, they give hands-on experience. After playing around with the tutorial, the documentation is easy to follow. It is clearly written and as short as could be expected for covering so much ground.

All in all, *Ability Plus* is a good choice for someone who wants to be able to work with a variety of programs. A person could run a whole business with this package. Unless your use is extremely sophisticated, you're unlikely to reach the limits of this program.

Copyright ©1988 by Ed Kahn. All rights reserved.

Resources:

Ability Plus $249
Migent Software
865 Tahoe Blvd., Suite 215
Incline Village, NV 89450

HOME OF FAST, CONVENIENT COURTEOUS SERVICE

Fry's ELECTRONICS

541 LAKESIDE DRIVE
SUNNYVALE

PHONE
408/733-1770

Prices Good Through June 7, 1988

GET THE HI-TECH ADVANTAGE WITH A TeleVideo® 386.....

Mono System

- 0 wait State 16 MHz 80386
- 2 MB of 80 ns RAM
- 1.2 MB Floppy Disk
- Serial/Parallel Ports
- Clock/Calendar
- 80387 Socket
- Hi-Res Monographics
- Mono Monitor

$2795

COMPAQ DESKPRO 386

40 MB MONO SYSTEM

- 16 MHz 80386
- 5 1/4" Floppy Drive
- 1MB RAM
- 40 MB Hard Disk
- Serial/Parallel Ports
- Clock/Calendar
- Hi-Res Monographics
- Mono Monitor

$4895

AMAX 386 Mono System

- 16MHz 80386
- 5 1/4" 1.2 MB Floppy Disk
- 1 MB RAM Expandable to 2 MB on Board
- Hi-Res Monographics Printer Card
- Mono Monitor
- Clock/Calendar

$2395

CARRY OFF THESE LAPTOP SPECIALS

COMPAQ® Portable III

20 MB LAPTOP COMPUTER

- 12 MHz 80286
- 640K RAM Expandable to 6.6 MB RAM
- 5 1/4" Floppy Disk
- 20 MB Hard Disk
- Serial/Parallel Ports
- Amber Plasma 80 x 25 line Display
- Full Size Keyboard

$3695

ZENITH data systems

Z-183 20 MB LAPTOP

- 4.77/8 MHz 80C88
- 640K RAM
- MS-DOS/GW Basic
- Serial/Parallel/ RGB Ports
- Clock/Calendar
- Backlit LCD Supertwist Tilt Display
- 3.5" Floppy Disk
- 20 MB Hard Disk

$2195

TOSHIBA T1000 LAPTOP

- 4.77/8 MHz 80C88
- 512K RAM
- Clock/Calendar
- 3.5" 720K Floppy Disk
- Supertwist LCD Display
- Serial/Parallel Ports

$769

Try These Enhancements To Complete Your PC

CITIZEN™ 120D

- 120 CPS Draft
- 16 CPS NLQ
- Tractor Feed
- 80 Column
- 1 Year Warranty

$149

THE COMPLETE PC

COMPLETE COMMUNICATIONS FOR YOUR PC !

IMAGE SCANNER
Captures Real World Graphics in 200 DPI by 2 1/2" Wide
$199

VOICE MAIL
Answers Your Phone. Forwards Your Messages. Has Multiple Voice Mailboxes. Remote Access
$299

FAX
- Autodial • Polling
- Delayed Transmission.
- Broadcasting.

All in Background! Word Processing To FAX Conversion
$399

BLUE CHIP

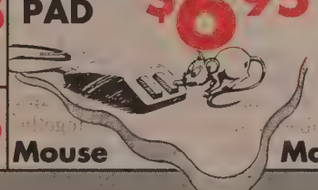
12 CPS DAISYWHEEL LETTER QUALITY D20/10

$149

KENSINGTON APPLE SECURITY SYSTEM $39.95
Prevents Theft of Your Apple Computer

IBM 6 Foot Printer Cable $3.95

WAVE PAD $6.95



Mouse Mat

Service

- Hard Disk Installation
- EPSON Printer Repair
- Novell Network Configuration
- PC/XT/AT/386 System Diagnostics

AVAILABLE 7 DAYS A WEEK

KENSINGTON MAC II VERTICAL CPU STAND $22.95
Allows MAC II to Go Under Desk

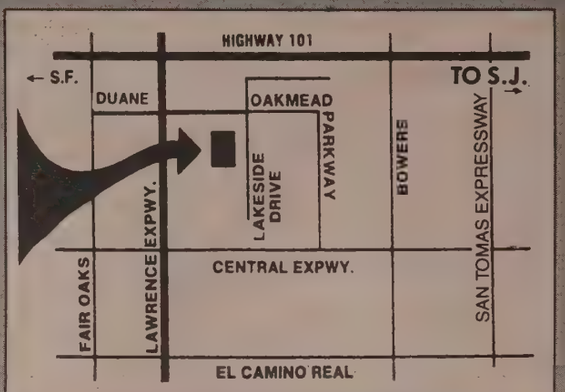
RT STYLE 101 Key Keyboard By Keytronics $59.95

HOME OF FAST, CONVENIENT, COURTEOUS SERVICE

Fry's ELECTRONICS

541 LAKESIDE DRIVE
SUNNYVALE

PHONE:
408/733-1770



Prices Good Through June 7, 1988

HOURS:
Mon.— Fri.
8 am-8 pm,
Sat. 9-6,
Open Every Sunday 9-6
VISA,
MASTERCARD
WELCOME

Limit Rights Reserved

master charge VISA

BLUE CHIP ELECTRONICS

PC POPULAR
4.77/10 MHz TURBO XT MONO SYSTEM

- 256K RAM Expandable to 640K on Motherboard
- 360K Floppy Disk
- Hi-Res Monographics Card
- Serial/Parallel/Game Ports
- Mono Monitor

$479

BLUE CHIP ELECTRONICS

6/10 MHz 80286 AT MONO SYSTEM

- 512K RAM Expandable to 2 MB on Motherboard
- 5¼" 1.2 MB Floppy Disk
- 2 Serial Ports
- 2 Parallel Ports
- Clock/Calendar
- Hi-Res Monographics Card
- Mono Monitor

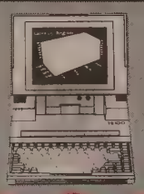
$949

EPSON® EQUITY II+
8/12 MHz AT MONO SYSTEM

- 640K RAM
- 5¼" 1.2 MB Floppy Disk
- Serial/Parallel Ports
- Clock/Calendar
- Hi-Res Monographics
- Mono Monitor
- MS/DOS 3.2
- GW Basic

$1349

TOSHIBA T5100
Portable 386 PC
The Ultimate Laptop



- Desktop power, in a compact 15 lb. package that's just 12.2"W x 3.5"H x 14.2"D.
- 80386 CPU at 16MHz; 80387 co-processor socket.
- 40MB hard disk, 1.44MB 3½" diskette drive.

$5695

COMPAQ 12 MHz DESKPRO 286
MONO SYSTEM

- 12 MHz 80286
- 256K RAM Expandable to 2MB
- 1.2 MB Floppy Disk
- Serial/Parallel Ports
- Clock/Calendar
- Hi Res Monographics
- Mono Monitor

$1888

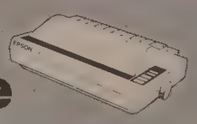
Seagate
30 MB HARD DISK DRIVE
RLL Controller
Cables
ST-238

$289

Seagate
40 MB HARD DISK DRIVE
40 MB
AT Drive

$399

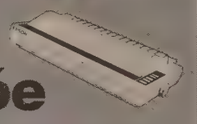
EPSON® FX-86e
DOT MATRIX PRINTER



200 CPS Draft
48 CPS NLQ
80 Column
Tractor Feed

$299

EPSON® FX-286e
DOT MATRIX PRINTER



200 CPS Draft
48 CPS NLQ
136 Column
Tractor Feed

$399

1200 BAUD 1/2 CARD MODEM

Internal
by Practical
Peripherals

$59.95

2400 BAUD 1/2 CARD MODEM

Internal
Hayes Compat.
By Practical Peripherals

$149.95

AST RESEARCH INC. TurboLaser/PS
Adobe PostScript Laser Printer

- 3 MB RAM
- 12.5 MHz 68000
- Apple Talk, RS232C & Parallel Port can be connected to IBM, Apple & DEC computer equipment
- 8 pages/minute
- 35 resident fonts
- 300 DPI resolution

$3295

The Cost Effective High Speed Solution

We Make Apples Grow!

AST RESEARCH INC. Mac 286

Runs MS-DOS Applications
Like Macintosh Software
Allows For: 640K RAM
Math Coprocessor
Operations
Hercules or CGA Supports

$1049

Felix

A 1 to 1 INPUT DEVICE

Mouse Compatible
Feeling is Believing!

$109.95 MAC

$139.95 IBM

MONITERM COLOR MAC
19" MONITOR
Macworld's Best!
1024x768

$3695

FRY'S BLOW-OUT ANNIVERSARY SALE·A·BRATION!!

APPLE MACINTOSH PLUS

1 MB RAM
3.5" 800K Floppy
Mono Monitor
Apple Keyboard
Serial/SCSI Ports
Monographics
Mono Monitor Built-in

$1349

FREE HYPERCARD SOFTWARE

IBM PS/2 MODEL 60

44 MB MONO SYSTEM

- 10 MHz 80286
- 1 MB RAM Expandable to 15 MB
- 3.5" 1.44 MB Floppy Disk
- 44 MB Hard Disk
- Hi-Res Monographics
- IBM 8503 Mono Monitor
- Floor Standing Unit

$3295

IBM PS/2 MODEL 25

MONO SYSTEM

8 MHz 8086 0 Wait State
512K RAM Expandable to 640K on Motherboard
720K 3.5" Floppy Disk
Clock/Calendar
Mono Monitor
Detachable Keyboard

$899

APPLE MACINTOSH II

- 1 MB RAM
- 800K Floppy Disk
- Serial/SCSI Ports
- Mouse
- Apple Keyboard

$2995

FUJI 5¼" DS/DD DISKETTES

$7.95 Box of 10 RAINBOW COLORS

$6.99 Box of 10 BLACK

intel INBOARD 386

386 YOUR PC/XT OR AT!

PC/XT
1 MB RAM
10 Times
Faster Than An XT!
Includes Cable Kit
$849

AT
0K RAM
5 times
Faster Than An AT
Includes Cable Kit
$1049

NEC P2200

24 PIN PRINTER

170 CPS Draft
55 CPS NLQ
Tractor Feed

$349

NEC MULTISYNC II

EGA/VGA MONITOR

800x560 Res.
31 Dot Pitch
Tilt 'n Swivel

$579

Microsoft WINDOWS

2.03
Icons, Pull-Down Menus & Windows For Task Switching
$99.95

386
Multitasking For 80386 Machines w/ Hi-Res Graphics
$139.95

30 MB MAC HARD DISK

External, Fast, Reliable

$619

ORCHID HI-RES COLORVUE MAC SE COLOR CARD

640x480 in 16 Colors

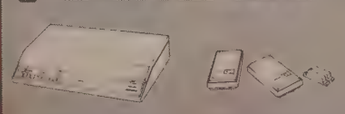
$495

VEGA VGA VGA/EGA CARD

Compatible to the Register Level

$288

SCHLAGE KEEPSAFER PLUS



$299

PLUS A $50 U.S. SAVINGS BOND

Purchase A Keepsafer Plus or a Keepsafer with Five Qualifying Accessories Now Through May 30, 1988, Send in Your Proof of Purchase to Schlage and Schlage Will Send You a $50 U.S. Savings Bond!

FREE. PICK ONE.

Buy 2 Deluxe Products and Get 1 Deluxe FREE From Now Through June 30th

$59.95 IBM

$69.95 IBM

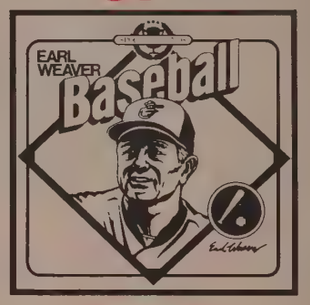
$26.95 IBM

$37.95 IBM

$36.95 IBM

$27.95 IBM

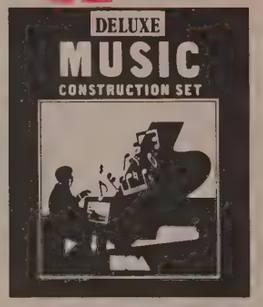
$32.95 IBM



$32.95 IBM

$32.95 IBM

$24.95 IBM



$79.95 MAC

$28.95 MAC

$29.95 ATARI ST

$54.95 ATARI ST

$29.95 ATARI ST

$34.95 ATARI ST

HOME OF FAST, CONVENIENT, COURTEOUS SERVICE

ELECTRONICS

fry's

541 LAKESIDE DRIVE
SUNNYVALE

PHONE
408/733-1770

Picks The Winners For You From:

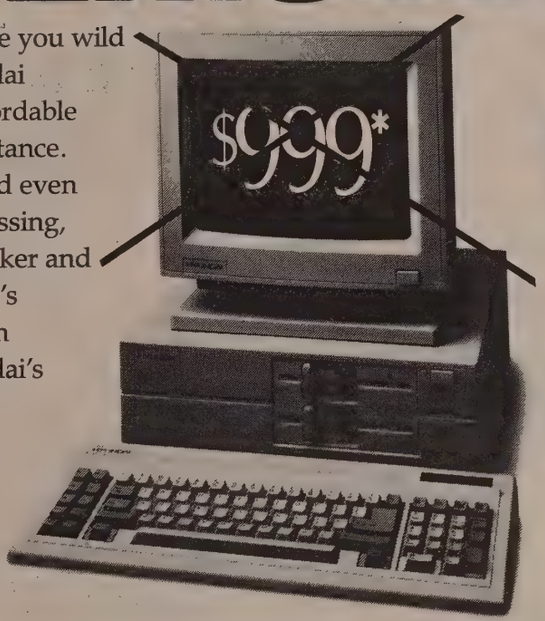
ELECTRONIC ARTS®

HYUNDAI'S NEW OFF-ROAD VEHICLE.

It uses no gas. And will drive you wild with delight. It's the new Hyundai Super-16T. A fast, powerful, affordable XT-compatible built to go the distance.

It comes fully-equipped. And even includes easy-to-use word processing, spreadsheet, database, spellchecker and communications software. What's more, it's backed by an 18-month warranty. But, best of all, Hyundai's new off-road vehicle is dirt cheap.

Test drive the Super-16T or one of Hyundai's other exciting off-road vehicles today.



ANNIVERSARY SPECIAL

Now Only

$699

Hyundai's Super-16T includes:

- 4.77/8 MHz 8088-11 Turbo Processor
- 640K RAM
- 6 Expansion Slots
- 360K Floppy Disk
- Mono Monitor
- Multi-Video (MDA/MGA/CGA)
- Serial/Parallel
- Clock/Calendar
- MS DOS V3.2/GW BASIC V 3.2

HYUNDAI

AVAILABLE NOW AT:

HOME OF FAST, CONVENIENT, COURTEOUS SERVICE

ELECTRONICS

Fry's

541 LAKESIDE DRIVE
SUNNYVALE

PHONE:
408/733-1770

*Suggested retail price. © 1988 Hyundai Electronics America. XT is a trademark of International Business Machines Corporation.

HOME OF FAST, CONVENIENT, COURTEOUS SERVICE

fry's ELECTRONICS

541 LAKESIDE DRIVE
SUNNYVALE

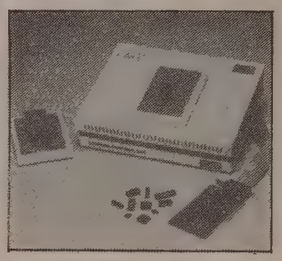
PHONE:
408/733-1770

SPECTACULAR SAVINGS

SOFTWARE DRIVEN DEVICE PROGRAM WORK STATION

Logical Devices

ALLPRO is a software expandable device programming workstation that keeps pace with the rapidly increasing programmable device market. A unique hardware/software architecture enables ALLPRO to easily grow in support and engineering software design capabilities as your device library increases. Intergrated with an IBM PC via high-speed parallel interface. ALLPRO becomes a total firmware and logic progamming center.



$3995

ALLPRO

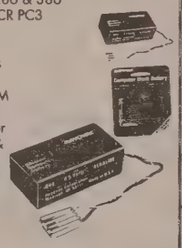
- IBM PC based device programming workstation
- Programs PALS, PLDs, PROMS, EE/EPROMS, MICROS
- Rapid upgrades can be accomplished in the field via floppy disc or modem transmission
- Self-subsistent device support-no additional active modules or plug-ins required
- An ever-increasing Device Library
- Software driven pin drivers
- CAD/CAE workstation software support for PLDs
- Up to four programmers can be clustered toone IBM PC
- Ergonomic engineering for ease of use
- Near unlimited device programming versatility
- 2 year library subsription
- Component test optional software purchase (logicm devices)
- Integrated optional PLD compiler

SUPPORTED DATA FORMATS

- INTEL Hex 80.86
- Motorola Hex S1, S2,S3
- EDEC
- Binary Hex
- Custom
- TEK Hex
- TI Hex

RAYOVAC COMPUTER CLOCK BATTERY

- Direct replacement for Real Time Clock battery in the follow-ing computers
- IBM PC AT
- Compaq Deskpro 286 & 386
- AT&T 6300 Plus NCR PC3
- Epson Equity
- Wyse Technology 2108, 2112, 2414 & 3216
- Leading Edge D & M
- Sharp 7500
- IBM 8150 Processor
- PC Unlimited 286 & 386
- IBM 8775 Display Terminal
- AST Premium/286, 286A 386 & 386
- Altair Exchange MFX 100
- Everex Televideo 844-1



$12.99

SPECTRONICS CORPORATION EPROM ERASERS

Model Chip	Capacity (uW/CM2)	Intensity	Unit Price
PE-140	9	8.000	$87.95
PE-140T	9	8.000	$118
Pe-240T	12	9.600	$187.95

5% CASE DISCOUNT ALL CHEMICALS IN STOCK

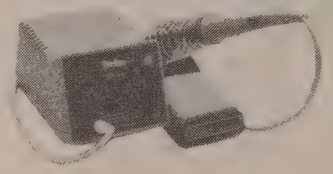
KESTER 60/40 Solder

.062D	$5.99
.050D	$6.29
.031D	$6.99
.025D	$7.99
.020D	$8.99

intel Math Coprocessor

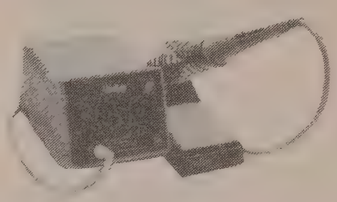
PC/XT 8087 80287		AT
$95	5/6 MH	$179
$149	8 MHz	$249
$199	10 MHz	$299

SOLDERING STATIONS



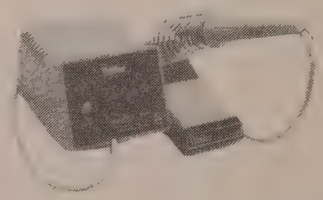
'Magnastat' temperature control system. Interchangeable tips for 600, 700 and 800°F. Soldering tool holder and stand may be fastened to left or right of main unit or positioned remotely. Tool holder contains water reservoir with wick to keep sponge moist. Burn proof silicon rubber cord. Weller® WTCPS

$89.95



Precise temperature control by insertion of temperature 'keys' into soldering tool. Temperature range 600, 700 and 800 °F. Soldering tool holder and stand may be fastened to left or right of main unit, or positioned remotely. Tool holder contains water reservoir with wick to keep sponge moist . Burn proof silicon rubber cord. Weller® Thermolock® WTLE

$119



Operator selected, electronically controlled temperature range from 350°F-850°F LED pilot lamp displays heating pulses. Soldering tool holder and stand may be fastened to left or right of main unit, or positioned remotely. Tool holder contains water reservoir with wick to keep sponge moist. Burn proof silicon rubber cord. Weller® EC 1001

$164.95

LED readout of temperature set control. Operator selected temperature range from 350°F-850°F. Soldering tool holder and stand may be fastened to left or right of main unit, or positioned remotely. Tool holder contains water reservoir with wick to keep sponge moist. Burn proof silicon rubber cord Weller® EC 2001

$224.95

80387-16 MATH COPROCESSOR

$495 20 MHz **$799**

BLUE SHOWER
A Tough Cleaner and Degreaser For All Electronic Components And Circuitry .24 oz 1657-248

$4.99

Sonica.

SENSORBEAM-KEYFINDER
Sonica has developed the' perfect keyfinder. No more frantic searching, whistling or clapping when you lose your keys. Simply press and hold the bar on the keyfinder transmitter and the keychain will emit a beeping sound. Sonica ™ Sensorbeam™ Keyfinder is the perfect gift for anyone who loses their keys. Sonica comes gift boxed and the batteries are included

$15.99

1 MEG SIMM 100 N.S.

$549

6264LP 150 8Kx8 CMOS STATIC RAM

$6.99

27128A-150 8x16K EPROM 150 N.S.

$7.99

HOME OF FAST, CONVENIENT, COURTEOUS SERVICE

fry's

PERSONAL & HOME ELECTRONICS

541 LAKESIDE DRIVE
SUNNYVALE

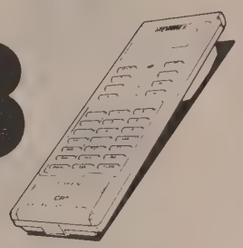
PHONE:
408/733-1770

MEMOREX

CP8 UNIVERSAL REMOTE CONTROL

- Combines All Your Current Remote Controls Into 1 (Up To 8)
- 24 Different Sequence Programs With Up To 48 Commands Each

$98



PORTABLE AUDIO

SONY® WALKMAN

SONY'S MOST AFFORDABLE AM/FM CASSETTE PLAYER

- AM/FM Stereo Tuner
- Local/Distant Sensitivity Switch
- Stereo Tape Playback
- Comfortable MDR Stereo Headphones

$29

Model WM-F41

MAGNAVOX STEREO RADIO/CASSETTE

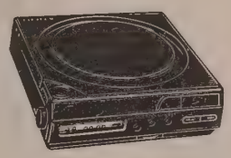
- Dual Cassette Decks
- Tape to Tape Dubbing
- Automatic Continuous Play
- AM/FM Stereo Tuner
- Two 4" Wide Range Speakers

$49

Model 8077

SONY® D-T3 DISCMAN With AM/FM STEREO TUNER

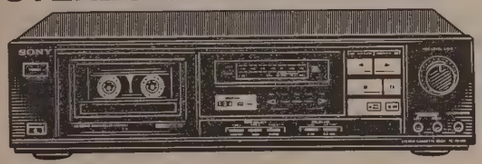
- Built-in AM/FM Stereo Tuner
- Supplied Rechargeable Battery
- Automatic Music Sensor (AMS)
- Shuffle Play Plus Disc Repeat Modes
- Auto Tracking Recovery
- Unilinear Converter® with Digital Filter



$188

HOME AUDIO

SONY® TC-FX150 STEREO CASSETTE DECK



- Dolby B & C Noise Reduction®
- Dual 5 Segment LED VU Meters
- Metal Tape Capability
- Headphone Output
- 3 Digit Counter

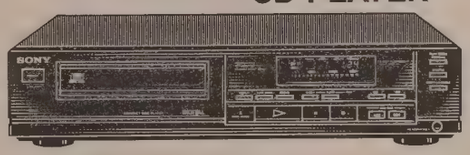
$98

SONY STR-AV250 AM/FM AUDIO/VIDEO RECEIVER

- 35 Watts per Channel Minimum RMS at 8 Ohms, 40-20 KHz with No More Than 0.8% Total
- Direct Access Quartz Frequency Synthesis Tuning System
- Switchable for 2 Pairs of Speakers (A, B, A + B)
- Video Sound Input

$128

SONY® CDP-350 PROGRAMMABLE CD PLAYER

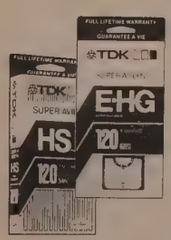


- Dual D to A Converters
- 2X Oversampling
- Envelope Differential Detection
- Headphone Jack with Volume Control

$178

VIDEO

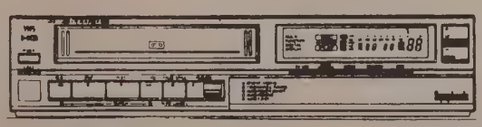
TDK® HS T-120



$2.88

Limit 20 Per Customer

Symphonic 5300 HQ VHS VCR

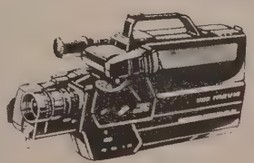


WIRELESS REMOTE • CABLE READY

- 6 Event/14 Day Timer
- 110 Channel Cable Ready Digital Tuner
- Auto Power On/Off
- Auto Rewind/Auto Eject

$179

PANASONIC HQ VHS CAMCORDER



Includes Hard Carrying Case

- High Speed Shutter
- CCD Image Sensor
- Flying Erase Head (Glitch Free Stop/Start)
- 6:1 Power Zoom
- Auto Focus

$1068

Model PU-320

Our new floppy is ten times better than its nearest competitor.

Most people are perfectly happy with the 3M diskette that can make 3 million passes with no media deterioration.

But not us.

So we developed the new 3M Mark Q™ diskette. And because of an improved formulation and a better manufacturing and coating process, it has been tested to 30 million passes. With no media deterioration. Based on accessing one file every hour, every day, that's about 2000 years' worth of work.

Now you might think that's a little overkill. But having an overly satisfied customer is what keeps us ahead of the competition.

Even if it is only ourselves.

Its nearest competitor

Our new Mark Q™ floppy

3M Worldwide Sponsor 1988 Olympic Games

5¼" DS, DD, RH PC/XT CAPACITY **$6.88**

5¼" DS HD AT CAPACITY **$15.95**

3M JUST STEPPED AHEAD IN

~~BACKUP~~

AGAIN.

Introducing 3M Formatted Data Cartridges.

Save nearly an hour or more of formatting time with 3M's new family of formatted data cartridges!

Ready for backup right out of the box. With the 3M assurance of the highest quality and data security available, plus compatibility with many major 10MB, 20MB and 40MB drives — including the new Apple 40MB subsystem!

PC 1000 ALPHAMAT*

$18.95

*COMPATIBLE WITH 20 MB Irwin, Data General, Olivetti, & Zenith

---

3 M Head Cleaning Diskettes

- Safely removes "error causing" debris
- Helps prevent accelerated media wear
- Helps avoid data loss and costly service calls
- Increases productivity
- Are cost effective

$5.95 5¼" - 10

$14.95 3½" - 10

DataSaver™ From 3M.

A whole new way to file diskettes.

- Diskettes conveniently at your fingertips.
- On-and-off attachment to your computer terminal.
- Magnefoil™ magnetic shielding* protects against data loss.

$2.95

3M Worldwide Sponsor 1988 Olympic Games

&

HOME OF FAST, CONVENIENT, COURTEOUS SERVICE
ELECTRONICS
Fry's
541 LAKESIDE DRIVE SUNNYVALE
PHONE 408/733-1770

NAMES YOU CAN TRUST!

HOME OF FAST, CONVENIENT, COURTEOUS SERVICE

ELECTRONICS

fry's

541 LAKESIDE DRIVE
SUNNYVALE

PHONE:
408/733-1770

IRWIN MAGNETICS

THE NUMBER 1 NAME IN DATA RESCUE

BACK UP WITH THE WORLD LEADER!
Over 100,000 Drives Sold!

COMPARE IRWIN TAPE VERSUS FLOPPY BACKUP

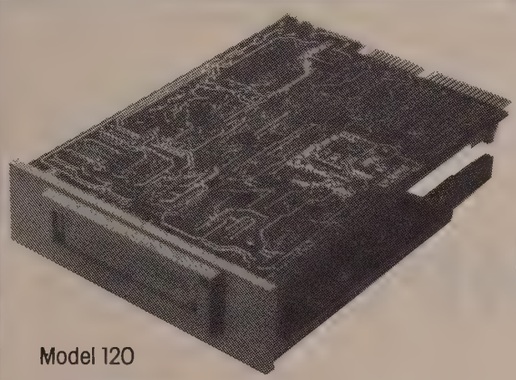
IRWIN TAPE BACKUP	FLOPPY BACKUP
Unattended - 8 min	Time consuming 1 hr. 6 min. per 10 MB disk
1 Formatted tape	23 floppies - Expensive!!
Insurance - Rugged Tape	Risk - floppies easily damaged

BACK-UP WITH IRWIN's PATENTED ACCUTRAK DATA TRACKING TECHNOLOGY

1 OUTSTANDING L.A.N. COMPATIBILITY
- Novell
- Token Ring
- STAR LAN and
- 3Com

2 ADVANCED E-2 TAPE SOFTWARE
INCLUDING:
- Online Help and
- Automatic Backup

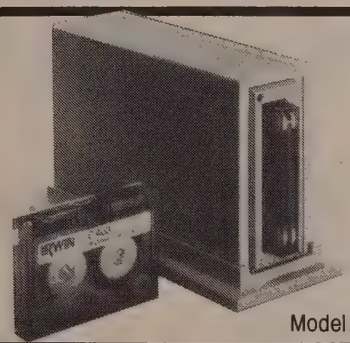
3 BACKUP YOUR PC, XT, AT and IBM/PS 2
Coming Soon:
IRWIN BACKUP FOR MAC!



Model 120

20 MB INTERNAL
IBM PC/XT/AT COMPATIBLE
250 KBPS

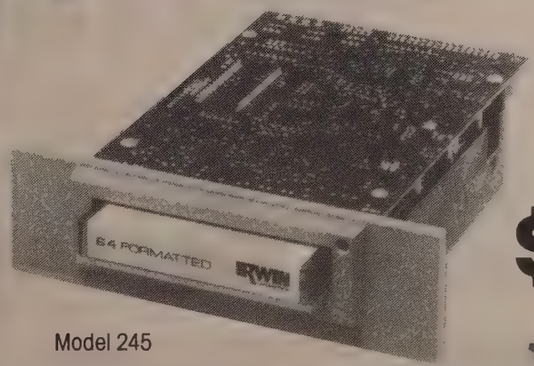
$349



Model 445

40 MB EXTERNAL
IBM PC/XT/AT
Includes Controller
250 KBPS

$569



Model 245

PS/2 40 MB
IBM PS/2 - 50/60/80
Includes 8450 Install Kit
500 KBPS

$499

WE HAVE A JOB FOR YOU!

Fry's Electronics Is A Fast-paced Retail Electronics Store Featuring Personal Computers, Peripherals, Software, Computer & Component Accessories, IC's, VCR's, Audio Components and A Full Service and Repair Department.

We Are An Innovative Marketeer With A Broad Selection Of Leading Edge Products For The Electronics Industry. Our Continued Growth Is Creating Opportunities For:

COMPUTER SALES
Ask for Janet

SERVICE TECHNICIAN
Ask for Ginger

COMPONENT SALES
Ask for Greg

AUDIO/VISUAL SALES
Ask for Bob

CASHIERS
Ask for Casey

HOME OF FAST, CONVENIENT, COURTEOUS SERVICE

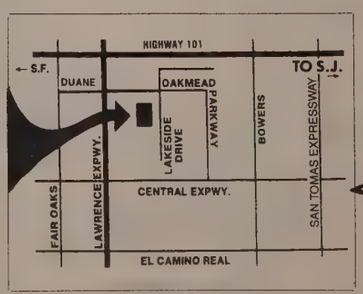
ELECTRONICS

fry's

541 LAKESIDE DRIVE
SUNNYVALE

PHONE:
408/733-1770

CALL or COME IN and Apply Now



NOW HIRING FOR FUTURE POSITIONS AT OUR NEW FREMONT STORE OPENING SOON!

Lucid 3-D

Memory-Resident Spreadsheet Wonder

By Steve Guttman

Lucid 3-D is an amazing spreadsheet that's a virtual grab-bag of features. *Lucid* was first introduced in 1984 when it was packaged in a snap-in ROM chip for the Tandy Model 100 portable computer. Since then, the whiz kids at PCSG have been refining and enhancing it until its fourth quarter '87 debut as a PC program. In January, *Lucid* won *PC Magazine*'s 1987 award for Technical Excellence, an honor it shared with Microsoft's *Excel*.

What makes *Lucid* different? For one thing, *Lucid* is normally installed as a memory-resident program. You know about memory resident programs, don't you? They're usually little shareware deals you download from bulletin boards. But a spreadsheet?

You'd better believe it! After installing it in memory, you can toggle between *Lucid* and your "foreground" application by hitting *Lucid*'s hot key combination (ctrl-left shift is the default). This gives you instant access to your spreadsheet from within any other program, and vice versa.

Lucid's clipboard lets you cut and paste data between your foreground application and the spreadsheet, so you can lift text from your word processor to use in the spreadsheet, or paste part of your worksheet directly into a document. I've been using *1-2-3* and *InWord* (Funk Software's add-in word processor) for most of my report writing. But the clipboard lets me use *Lucid* on top of *WordPerfect* — a dynamite combination.

Because it is memory resident, *Lucid* does claim precious RAM. PCSG has crammed the code into a little over 95 K-bytes (compare that to the 280 K-bytes of code for *1-2-3* v2); with a default spreadsheet size of 64K, expect to lose about 159 K-bytes. This is not an insignificant amount of RAM. But because it's very easy to uninstall *Lucid* when needed, this shouldn't be a big concern.

Working With Lucid

At first glance, the *Lucid* screen is a close cousin to most spreadsheets — a matrix of numbered rows and lettered columns. The "/" key even brings up the main menu. But that's where the similarity ends. *Lucid* lets you display up to nine windows on the screen at one time, each containing a complete spreadsheet, or a different view of the same spreadsheet. These windows can be moved, resized and zoomed using the cursor keys or mouse in a very *Windows*/Macintosh-like way.

You can use the cursor keys to do anything in *Lucid*, but its real power and flexibility are unleashed with a mouse. Mouse control is built into most of the commands, not provided as an afterthought. Three character-icons in the corners of the spreadsheet will move, resize or zoom a spreadsheet window when clicked-on. Another spawns a pop-up calculator with 3-register memory. The mouse can be used to highlight ranges, to execute menu choices, and to cut and paste numbers or formulas. *Lucid* wants you to think you're working on a Mac. And despite the fact that it uses text-mode graphics, it does a pretty good job.

Lucid is definitely no *Lotus* clone. There are a lot of people out there who don't necessarily think that *1-2-3* is the last word in spreadsheets. And I have a feeling the folks at PCSG are part of that audience. There is no attempt to maintain keystroke compatibility with *1-2-3*, as *VP-Planner* and *The Twin* do. Yet the feel of the program is distinctly spreadsheet-like, and users with only modest experience should find themselves easily mastering the basic skills.

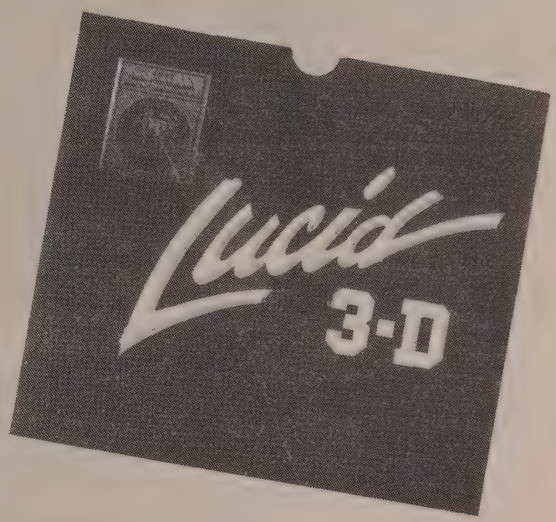
Like most of the new breed of intelligent spreadsheets, *Lucid* doesn't have to be told when you're typing a cell name, or a function. So you don't have to precede cell names by "+" or "−", or function names by "@" — *Lucid* knows. In addition, most of *Lucid*'s functions will accept multiple ranges. Instead of adding three rectangular blocks by "@sum(D1..D16) + @sum (E12.E14) + @sum(E16.E25)," simply type or highlight these three ranges to create the command, "sum(D1.D16,E12.E14,E16.E25)."

Another of *Lucid*'s clever bonuses is the ability to create user-defined functions. Say you need to repetitively calculate the hypotenuse of a triangle. Normally you would have to enter or copy a formula in each of your answer cells looking something like, @SQRT(A3^2+B6^2). In *Lucid*, you can define this formula in a generic fashion as SQRT(%1^2+%2^2), where %1 and %2 are placeholders for two arguments (like DOS batch files). Then, give the cell in which this formula resides a range name, for example, "hypot." The "hypot" function can then be accessed from any cell by typing "hypot(arg1,-arg2)", where the arguments can be cell addresses, constants, numbers or ranges.

Macros are distinctly un*Lotus*-like, and may take a little getting used to. *Lucid* uses a keystroke recorder to memorize a series of commands which are attached to an alt-key combination. The commands can then be played back by hitting the defined alt-key.

All macros are stored in separate MAC files, and multiple MAC files may be accessed at the same time. Unfortunately, the macros must be modified with a special macro editor which is provided as an external program. Also, they can't be as easily documented as normal *Lotus* macros. But, since *Lucid* is memory resident, you can define macros that go outside of the spreadsheet. For example, you could create a macro that starts one program, extracts data, writes it to another program, and then takes you home to *Lucid*. Now that's pizazz!

Lucid's help is also outstanding. Besides being context-sensitive, it's fast, informative and comprehensive. And for the classically inclined, I found several help screens composed of quotes from Shakespeare and Longfellow. Perhaps HELP should really be called HELP and INSPIRATION.



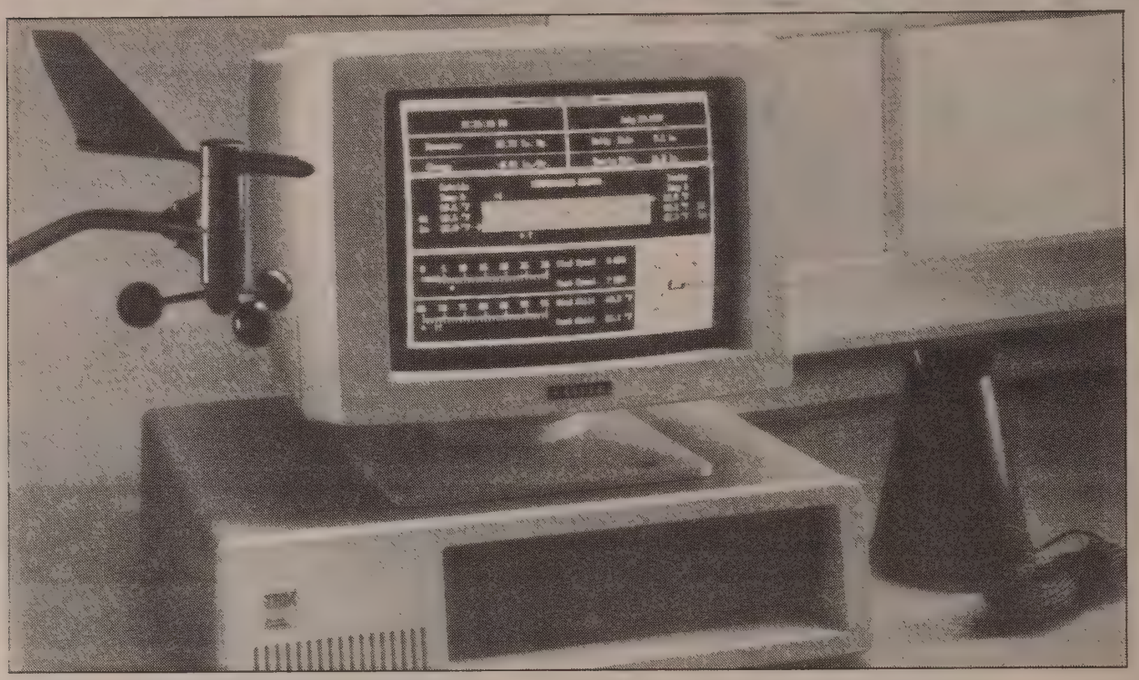
As its name implies, *Lucid* has three-dimensional capabilities. Any cell can contain information from a cell in another spreadsheet. And *Lucid* lets you easily traverse these links to travel from spreadsheet to spreadsheet. This feature is so useful and so powerful that I think it will have to become a standard feature of future spreadsheets.

If *Lucid* has an Achilles heel, it has to be the lack of graphics. In its current incarnation, *Lucid* has no charting capabilities, and this may limit its potential audience. For those needing plots and graphs, PCSG recommends (and sells) New England Software's highly rated *Graph-In-A-Box*, a memory resident plotting program that supports a wide variety of plot-types and printers.

Lucid has many, many more features, including the ability to attach notes to any worksheet cell, to do two-key sorting, and built-in auditing capabilities. It can read and write *1-2-3* files, do search-and-replaces, perform automatic backup and recover, and lots more. In short, at $149 list, *Lucid* is a real bargain.

Lotus thinks *1-2-3* is the program to beat. And Microsoft's *Excel* has this "we're big and brawny and we're here to stay" kind of attitude. But *Lucid* shows more of a "we're the new kids on the block" punch. And like those new kids who you don't know too well at first, you keep discovering more and more things to like about *Lucid*. And these days it's rare to find a program that keeps you saying, "Now how did they think of that...?" (*Lucid 3-D* by Personal Computer Support Group (PCSG), 11035 Harry Hines Blvd., #207, Dallas, Texas 75229, 214/351-0564. Retail price $149.00.) □

The PC Weather Pro



A Low Cost Weather Station That Satisfies Both Professionals And Amateurs

By Robert Grant Beauchamp

The PC Weather Pro from Technology Marketing is a system that uses your PC to monitor the weather. It consists of an add-in card, a range of instruments and software that allows you to keep track of all the data you've accumulated.

What makes the PC Weather Pro unique is its usefulness to both the hobbyist and the weather professional. For home users, it allows their computers to "interface" with the outside world, measuring and recording real events and patterns rather than just space invaders. For the professionals, the Weather Pro's high quality instruments and comprehensive software make it the perfect alternative for a low cost remote weather station.

The Weather Pro's instruments include an anemometer (wind speed) a wind vane (wind direction), self emptying rain sensor, indoor and outdoor temperature sensors and a barometer. All the sensors are made of high quality materials and look to be able to withstand years of exposure to the elements.

The Weather Pro's high quality instruments and comprehensive software make it the perfect alternative for a low cost remote weather station.

Setting Up Your Weather Station

The setting up of the outside instruments introduces an element of adventure into your computer life. You may never have pictured yourself scrambling up on your roof when you purchased your PC, but in the name of science, what's a little danger? Since it is necessary to place the wind vane and wind speed cups high enough above the peak of your house to avoid local air turbulence, the utmost caution is advised. Careful placement of the rain sensor is also necessary in order to avoid trees, blowing leaves or uneven surfaces that may affect the sensor's accuracy. If you have a very large house or live in an apartment building, extender cables are available from Technology Marketing.

The next step is getting the wires that lead from the sensors into your home. Running them through a partially opened window is not advised, as the cords may get damaged from constant opening and closing of the window. The alternative then is to drill a hole in the side of the house and run the wires through there. Your spouse may not appreciate this, but again, this is science. Proper insulation of the hole should prevent any weather you're monitoring from getting in your home.

What the instruments connect to is the PC Weather Pro's internal half slot add-in board. The card easily plugs into any one of your PC's expansion slots. The board is powered by an AC power adaptor which plugs into your power strip. The jacks on the board where the sensors plug in are clearly marked.

Whenever you add boards to your PC you may have address conflicts, and it may be necessary to change the address either on the conflicting card or on the PC Weather Pro card. The Weather Pro card installed in our test computer did not have any conflicts with an already packed AT, so you probably won't have any problems. If you do, the Weather Pro provides clear documentation on how to change the address.

Weather Computer

What makes the Weather Pro fun as well as a serious scientific instrument is its Weather Computer software. When you open up the program it gives you a weather bulletin screen with all the current weather statistics at a glance. It shows barometric pressure, barometric pressure change, daily and yearly rainfall statistics and the current indoor and outdoor temperatures along with highs and lows. The bulletin screen also gives you the wind speed and gust speed and automatically calculates and displays the wind chill factor. In one corner the screen shows the wind direction in compass headings (N, NE, SE etc.) and degrees.

For a more detailed view you can go to the rain, temperature or wind bulletin screens. The wind bulletin screen, for example, shows the current, high and average wind speeds in miles per hour, kilometers per hour, knots, meters per second and feet per second. It also records the record high speed and the time it occurred.

The Weather Computer software is also able to store data and then plot it. The data may be accumulated in computer memory or stored on disk. The plotting screens take your stored data and plot it graphically. To make a print out of your graph you simply use the DOS GRAPHICS command and press Shift-PrtSc*.

Evaluation

Whether you want to evaluate the weather for a science fair project, at the local municipal airport or at a remote site of a proposed ballpark, the PC Weather Pro is able to meet stringent demands at a low cost. It represents a new philosophy in weather monitoring by using electronic rather than manual gauges. It also reawakens an old philosophy in personal computing that encourages the user to interact and learn from the very real environment that surrounds us. Technology Marketing Incorporated, 4000 Kruse Way Place, Building 2, Suite 120, Lake Oswego, Oregon 97035. (503) 635-3966.

TOSHIBA

WORLD'S LIGHTEST PORTABLE PC!

▲T1000

- Richly featured, yet weighs just 6.4 pounds.
- Includes 512KB memory, expandable to 1.2MB, built-in 720KB 3.5" floppy drive, supertwist screen, and MS-DOS® in ROM.
- Runs on battery power and AC too.
- Easy expansion with built-in ports and broad option choices.
- Toshiba's most affordable portable ever!

$795.00

TOSHIBA

Less wait. Less weight.

T5100

- The ultimate portable 386 PC.
- Desktop power, in a compact 15 lb. package that's just 12.2"W x 3.5"H x 14.2"D.
- 80386 CPU at 16MHz; 80387 co-processor socket.
- 40MB hard disk, 1.44MB 3½" diskette drive.

$4,975.00

TOSHIBA

HARD DISK PERFORMANCE IN A BATTERY-POWERED PORTABLE.

▲T1200

- 20MB hard disk, 1MB memory, 720KB 3.5" floppy, supertwist screen and removable, rechargeable battery pack.
- All in a 10.9 pound portable that runs up to 7 hours on batteries (AC too!)
- Easy expansion with built-in ports and broad option choices.
- Everything you want in a portable PC!

$2,325.00

TOSHIBA

THE LIGHTEST, SMALLEST AT-POWERED PORTABLE

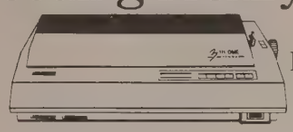
▲T3100/20

- Desktop performance in a 15-pound package.
- Needs just 1.5 square feet of work space; tucks in a desk drawer.
- 20MB hard disk, 720KB floppy, memory to 2.6MB.

$3,125.00

TOSHIBA

Start A Feeding Frenzy.



P351SX

- The P351SX is a letter quality, 24-pin dot matrix printer.
- 32-digit front panel control that eliminates dip switches.
- Prints an amazing 360 cps (draft) and 120 cps (letter quality).
- Advanced paper handling features include an automatic envelope feeder, a built-in tractor and tear bar, fan-fold bypass, and an auto-load lever.
- Prints six-part forms with each part as legible as the first.

$1,055.00

TOSHIBA

THE INDUSTRY STANDARD BATTERY-POWERED PORTABLE.

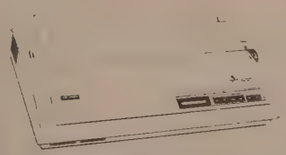
▲T1100PLUS

- Desktop capabilities in a go-anywhere PC.
- Includes two built-in 720KB 3.5" floppy drives, 640KB memory & supertwist screen.
- Exceptionally compact – weighs less than 10 pounds.
- Runs on battery power and AC too.
- Easy expansion with built-in ports and broad option choices.

$1,395.00

TOSHIBA

HERE'S THE PRINTER YOU DESIGNED!



- Includes built-in tractor feed, fan-fold bypass for single sheets, auto load, tear bar, single sheet feed guide, 4-parts forms capability — all standard.
- High speed drafts at 216 CPS, letter quality at 72 CPS, high resolution graphics too!
- Wide carriage versatility in an affordable 24-pin printer.

▲P321SL **$525.00**

▲P341SL **$695.00**

TOSHIBA

No other PC AT® this complete could fit this ad.

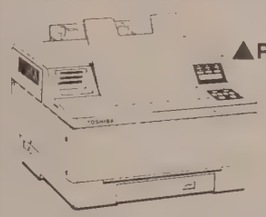
T3200

- More capabilities than a desktop PC in a portable PC AT.
- Compact 18.7 lb. package.
- 80286 CPU at 12MHz; 80287 co-processor socket.
- 40MB hard disk, 720KB 3½" diskette.
- Two internal IBM-compatible expansion slots.

$3,845.00

TOSHIBA

THE HIGH VOLUME, HIGH VALUE LASER PRINTER.



▲PageLaser12

- A total solution for networks, work groups, secretarial printing stations and high volume applications.
- Optional envelope feeder, output jogger/collator, universal paper trays.
- Software compatible — multiple emulations are standard, including HP LaserJet 500+.

$2,525.00

TOSHIBA

SUPER DUPER SALE!!!

Store Hours:
Mon-Fri: 9 a.m.-6 p.m.

© 1987 Toshiba America Inc. Information Systems Division. Lotus and Metro are trademarks of Lotus Development Corporation. IBM and PC AT are registered trademarks of International Business Machines Corporation.

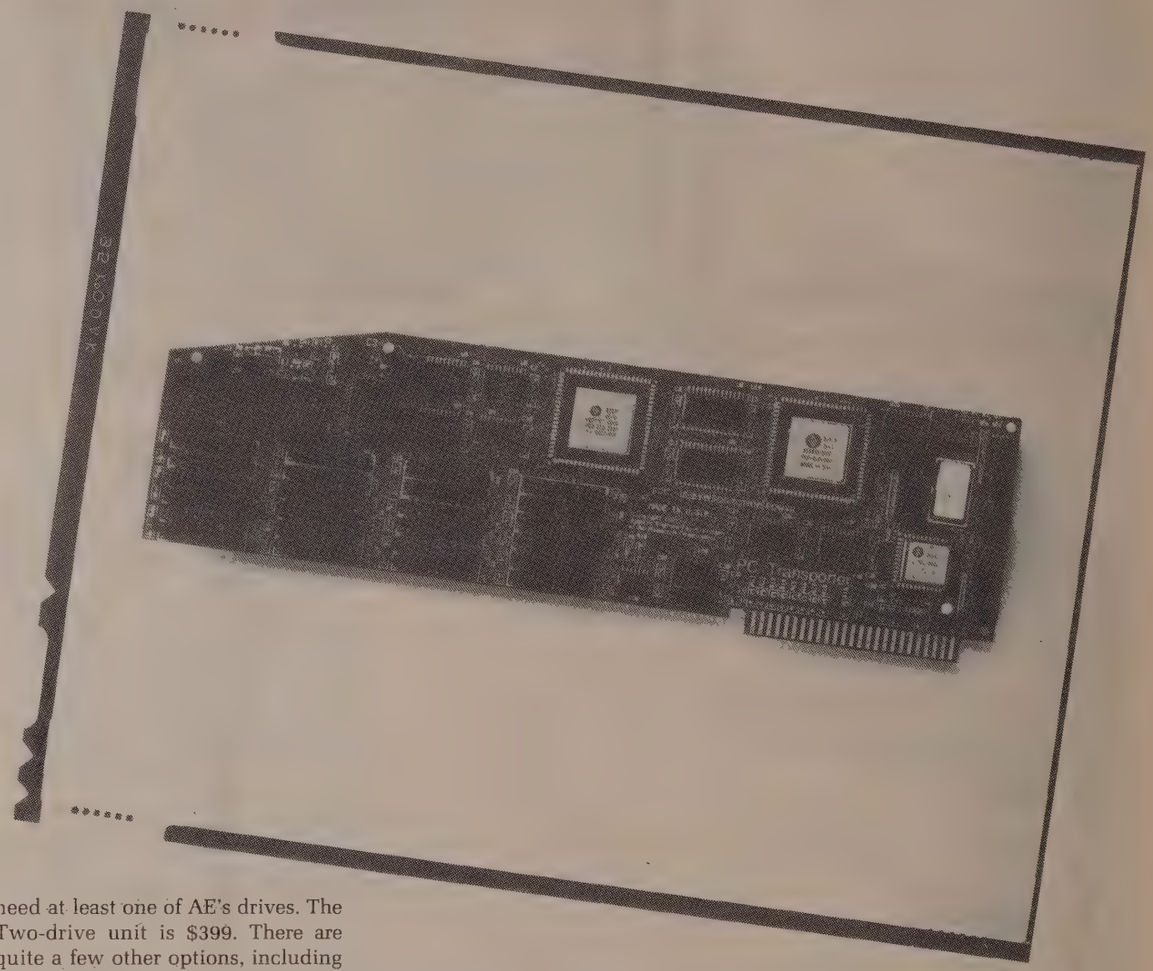
SCI/TECH COMPUTER STORES

"DETERMINED TO BE BEST — DESTINED TO BE FIRST"

1501 EL CAMINO REAL
BELMONT, CA 94002
(415) 591-1663 EXT. 100
FAX: (415) 591-1698

The Applied Engineering PC Transporter System

By Mike Markowitz



It isn't every day that an add-in card for the veteran Apple II rates a story in the *Wall Street Journal*. That's what happened during AppleFest in September, 1987, as Applied Engineering was demonstrating the PC Transporter to admiring throngs. "Now Apple Speaks IBM" said the colorful buttons. To many Apple hackers it was a chilling prospect.

The product finally shipped in January, 1988, only a few months late. The biggest initial customer was the Department of Defense, which took 4,000 (to be installed in new Apple IIGS's in schools for military dependents all over the world.)

With a price tag as impressive as its spec sheet, PC Transporter is aimed at Apple users who need MS-DOS capability, but who don't want to buy a whole bulky, obsolescent computer to get it. In effect, PC Transporter puts an entire PC-XT clone inside your Apple, where it sleeps until you wake it up by running special "preboot" software.

When it comes alive, it treats your Apple peripherals as if they were the equivalent devices connected to a PC. The ImageWriter printer, for example, emulates the IBM Graphics Printer, and Apple 800K 3.5" disk drives can be used as MS-DOS 720K drives. The Apple mouse can emulate the Mouse Systems PC mouse connected to COM2. MS-DOS can read any ProDOS clock/calendar to time/date stamp files. You can even create an MS-DOS volume on a ProDOS-compatible hard disk. Although PC Transporter has no PC-compatible "slots" of its own, it can use devices connected to many of the slots and ports of the Apple II.

First the price tag, then the spec sheet . . .

Cost

The package we received for review invoiced out at $957 retail. This included:

PC Transporter with 768K	$639.
IIGS Installation Kit	49.
5.25" 360K One-drive System	269.

The minimum configuration of the card is 384K of RAM for $489. The installation kit (cables) for the IIe or II+ is $39. Apple 5.25" drives are single-sided, and too dumb to work normally with MS-DOS, so you will need at least one of AE's drives. The Two-drive unit is $399. There are quite a few other options, including an 8087-2 math co-processor chip for $229. Ouch.

You can upgrade the memory in 128K increments ($40 each). The chips are not standard DRAMS, but "dual ported" ZIP chips that stand on edge, to take up less space on the board.

Apple II+ users will need to buy an IBM-style keyboard ($139) and adapter cable ($34), since they don't have enough keys, even in funny combinations, to use MS-DOS software. Apple IIGS users contemplating the world of MS-DOS may also wish to ditch their toy keyboards for something more substantial. Otherwise, the keyboard remapping is fairly easy to remember: <open-apple> becomes <Alt>, and <closed-apple> in combination with the digits gives you the function keys.

Specifications

PC Transporter is a remarkable feat of engineering. The design team included Cliff Huston, who helped Steve Wozniak design the original Apple II disk controller, Dick Huston, who wrote the ProDOS operating system, Peter Quinn, the engineering project manager for the Apple IIe and IIc, and several other Apple veterans. Apart from the RAM chips, there are only 15 chips on the board (16 if you add the math co-processor). The disk controller chip and video chip are especially impressive as examples of customized large-scale integration. The card draws only 350 milliamps of current on standby, 600 milliamps when active. The use of surface-mount technology should ensure that this will be a reliable board. The CPU is an NEC V-30, which emulates the Intel 8086 operating at 7.16 Megahertz. The video output supports the standard IBM Color Graphics Adapter modes, but can be used with composite, TTL RGB or analog RGB monitors.

The twenty-four RAM chips are special "dual ported" memory, accessible to both the PC Transporter and the Apple's own microprocessor. You can use this memory as a RAM disk when running Apple ProDOS programs. It appears as "drive #1" of the slot PC Transporter is plugged into, with the volume name/RAMAEPC.

Installation

The board can live in any Apple slot, except #3. On the IIGS it can go into Slot #7 and it doesn't interfere with the memory expansion slot. The package we received included a short videotape (VHS format) in which the well-groomed hands of a young lady demonstrate all the tricky steps of the installation process. The manual gives a detailed procedure for each kind of Apple II.

WHOLESALE PRICES

$AVE - BUY DIRECT FROM FACTORY

XT-TURBO COMPLETE SYSTEM

- 4.77/8 MHz switch clock speed
- 256K RAM installed on motherboard
- 360K Floppy drive w/controller
- XT/AT style keyboard
- Hi-Res Mono Amber monitor w/swivel
- Monographics card w/printer port
- 150 W switching power supply
- 8 expansion slots
- Fully assembled & tested
- Full one year warranty

Suggested: $899 **$465**

AT-TURBO COMPLETE SYSTEM

- 6/10 MHz switch clock speed
- 512K RAM installed on motherboard
- 1.2 MB Floppy drive w/controller
- AT style keyboard
- Hi-Res Mono Amber monitor w/swivel
- Monographics card w/printer port
- 200 W switching power supply
- CMOS clock/calendar
- 8 expansion slots
- Fully assembled & tested
- Full one year warranty

Suggested: $1495 **$899**

SYSTEM BOARDS (W/Zero K)

- 2 Layers TURBO XT (4.77/8 MHz) ---------- $89
- 4 Layers TURBO XT (4.77/8 MHz) ----------$103
- 4 Layers TURBO AT (6/10 MHz) ----------$310
- 4 Layers TURBO BABY AT (6/10 MHz)---------$300

POWER SUPLLY

- 150 Watts---------- $47
- 200 Watts---------- $75

CASE

- XT Slide-in (FCC)---------- $25
- XT Flip-top w/3 LED ---------- $29
- XT Slide-in w/3 LED---------- $45
- AT Slide-in w/3 LED---------- $60

FLOPPY DISK DRIVE

- Fujitsu 360 KB ---------- $75
- Teac 360 KB ---------- $85
- Teac 1.2 MB----------$115

KEYBOARD

- XT/AT Switchable---------- $35
- XT/AT Intelligent (Enhance)---------- $65

MONITOR

- Samsung w/tilt (Amber)---------- $75
- Casper EGA ----------$365
- Samsung EGA----------$345
- Samsung CGA----------$245
- NEC MULTISYNC EGA----------$585

ADD-ON BOARDS

- XT Floppy controller ---------- $17
- AT Master Floppy controller ---------- $59
- Monographics w/printer port---------- $49
- Color graphics w/printer port ---------- $49
- EGA card---------- $145
- Multi I/O card w/cable---------- $65

HARD DISK DRIVE

- Seagate 20MB w/controller & software --------$289
- Seagate 30MB w/controller & software --------$325
- Seagate ST-251 40MB----------$450

PRINTER

- Panasonic 1080i ---------- $190
- All Panasonic models---------- $call

MISCELLANEOUS

- Logic Mouse ---------- $75
- DOS 3.21 w/manual----------$70
- AC Power Center----------$25
- Joystick IBM/Apple----------$19
- Printer cable---------- $9
- Everex 1200 Internal Modem ---------- $90
- Everex 2400 Internal Modem ----------$185
- Computer Paper 3000 sheets---------- $23

Call for other configurations...

Distributors & Dealers Welcome. QUANTITY DISCOUNT AVAILABLE

MD & PC PRO COMPUTERS

115 N. 4th ST., STE. 111
SAN JOSE, CA
TEL. (408) 993-1505

1394 TULLY RD. STE. 207
SAN JOSE, CA 95122
TEL. (408) 947-7738

22554 FOOTHILL BLVD.
HAYWARD, CA 94920
TEL. (415) 538-0462

SATURDAY, MAY 28

COMPUTER
BARGAIN SHOW

BAY AREA
Computer Swap

EVERY ITEM ON DISPLAY IS AVAILABLE FOR IMMEDIATE PURCHASE AT BARGAIN PRICES

COW PALACE
SAN FRANCISCO

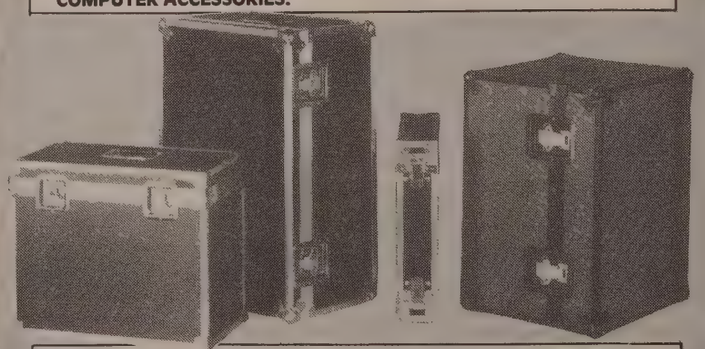
DIRECTIONS: From 101 or 280 take the Cow Palace Exit. Follow the signs to the Cow Palace, located at the corner of Geneva & Santos.

Admission $5 Children Under 12 FREE Sat. 10 a.m. - 5 p.m.
For Info. Call 415-340-9113

A MICROSHOWS PRODUCTION

COMPUTER CASES
20% LESS
THAN THE TOP COMPETITOR'S PRICES!

- Top Quality, Hand Finished Cases
- Custom Made Cases in Any Size, Configuration, or Specification —7 Colors To Choose From!
- Wholesale Orders Welcome—Quantity Discounts
- Repair Services Available
- MANEX Cases Custom Built For IBM's, APPLES, PC CLONES, PRINTERS, MONITORS, VIDEO EQUIPMENT, AND ALL OTHER COMPUTER ACCESSORIES.



We Manufacture and Design Heavy Duty, Quality Cases for the Safe Transportation of all Types of Computer Equipment. Perfect for Computer Trade Shows, Sales People, Manufacturers. Made Locally for Speedy, Personal Service.

MANEX COMPANY (415) 533-6573
4356 COLISEUM WAY, OAKLAND

With a price tag as impressive as its spec sheet, PC Transporter is aimed at Apple users who need MS-DOS capability, but who don't want to buy a whole bulky, obsolescent computer to get it.

The IIGS installation kit includes a separate, small circuit board called the Color Switch, which takes the digital RGB output from PC Transporter and converts it into an analog RGB signal for the Apple monitor. The Color Switch snuggles up against the power supply case (a little rubber bumper keeps the pins on the back side of the card from shorting out on the case). The cabling to and from this board makes some tight turns, but we were able to complete the installation without difficulty.

Users who have some confidence and experience in installing and removing circuit boards should have no difficulty with PC Transporter. The board uses static sensitive CMOS components, however, so the usual precautions should be taken (touch the power supply case to discharge yourself, don't do the installation on a dry windy day, unplug your electrostatic air purifier, and keep the cat out of the room).

According to Applied Engineering, the PC Transporter is compatible with the Laser 128 and later Franklin clones of the Apple II, although this is not mentioned in any of the advertising or documentation . . .

Documentation

The 162-page spiral-bound User's Manual is written to a very high standard of clarity and completeness, but the sheer complexity of the product means that most users will have to invest a few solid hours of study. Chapters cover hardware installation, software configuration, technical theory of operation, using the PC Transporter software, MS-DOS reference, keyboard reference, disk drives, printers and other peripherals.

Appendices list the Apple interface cards supported, PC Transporter file types, MS-DOS Utilities, and a brief bibliography. A good four-page index makes the manual a pleasure to use.

Compatibility

PC Transporter performs exactly like a typical PC clone, in most respects. Lotus *1-2-3* and *Flight Simulator* ran without difficulty, but a few copy-protected games would not boot, or crashed immediately after loading. The MS-DOS operating system is *not* provided with AE's package, but you can legally purchase a copy from almost any computer store for under $100. The following programs all ran perfectly:

MS-DOS 2.11, *Mavis Beacon Teaches*, GWBASIC, *Typing!*, PC-DOS 3.30, *Copy II PC*, *WordStar* 3.3, *PC Tools*, *MultiMate* 3.5, *Norton Utilities*, *VolksWriter*, *Colortrope*, *Kedit*, *Chessmaster 2000*, *Print Shop for the IBM PC*, *Print Master*, *Pro-Design II* (demo disk).

We even ran IBM's own tutorial disk "Exploring the IBM Personal Computer XT." You can't get more True Blue compatible than that! Peter Norton's handy SYSINFO utility gave a computing performance index of 3.2 (relative to the original IBM PC).

We could not get any PC games to recognize the Apple joystick. AE's tech support explained that even though the Apple II and the IBM PC use the same kind of "analog" joystick, the Apple handles input from this device at a much slower rate, and there was no cost-effective way to emulate the IBM-style game port. Few purchasers of PC Transporter will be buying the product in order to play games, so we do not see this as a major compatibility problem . . .

Software

To use PC Transporter, you place AE's preboot disk (both 3.5" and 5.25" formats are supplied) in an Apple drive, and a bootable MS-DOS disk in a TransDrive, and simply turn on the computer. The software is a standard ProDOS application, (so you can launch it in the usual ways) but after loading itself into the first 128K of memory on the card, it runs a little memory test, snaps into MS-DOS and boots to the familiar A> prompt. If you have forgotten to put a bootable MS-DOS disk in the drive, or left the latch open, the program crashes with a fatal error, and you have to reboot.

GREAT SELECTION, PRICE, QUALITY & SERVICE
PC/XT/AT EXPANSION PRODUCTS

Everex AT System

8 MHz, 1 Wait State $850
10 MHz, 1 Wait State 950
10 MHz, 0 Wait State 1050
12 MHz, 1 Wait State $1225

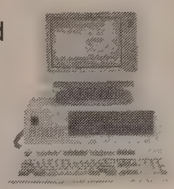
Includes:
- 512K on Board
- AT Keyboard
- 200 W Power Supply
- 1.2 Meg Floppy Drive
- Floppy + Hard Controller
- 48 Hour Burn-In

★ ★SPECIAL★ ★
Sysgen Tape Back Up Internal 60 MB for XT's & AT's & Compatibles. Model 1779.
$439

30 MB TURBO XT COMPATIBLE SYSTEM

- 256K on Motherboard w/Case
- 4.77-8 MHz
- 150W Power Supply
- Keyboard
- 1-½ Height Drive
- 30 MB Hard Disk w/Controller
- Mono Graphics Card w/Monitor
- Serial & Parallel
- Clock w/Game
- Floppy Controller
- Softpatch Turbo Bios

ONLY $785



AT 12 MHZ COMPATIBLE SYSTEM

- 256K with 120NS Memory
- 1 Wait State 6/8/10/12 MHz
- 1.2 Floppy Drive
- Floppy & Hard Disk Controller
- AT Keyboard
- 200W Power Supply
- Mono/Color Graphics w/Printer Port
- Monitor
- SI = 12.9

ONLY $975

★ ★SPECIALS★ ★

XT 10 MHZ SYSTEM-256K, 2 Drives	Only $650
PORTABLE XT TURBO	Only $759
LCD LAPTOP PORTABLE SYSTEM	Only $995
FARADAY 8 MHZ AT SYSTEM	Only $825
TANDY 4.77 MHZ AT SYSTEM	Only $475

Ask For Our 386 Turbo Systems

INTEGRATED CIRCUITS

8087-3 (5 MHz)	105	4164-150/120/100	Call	51258P-10	Call
8087-2 (8 MHz)	150	4416-15	2.00	V 20-5/8/10	8/9/15
8087-1 (10 MHz)	195	44164-15/12 NS	Call	V 30-8/10	11/25
80287-8	235	41256-150/120/100/80	Call	2764-25	3.00
80287-6	155	4128-15 (Piggy back)	3.50	27128-25	4.50
80287-10	275	68766-35 or 8748	10	27256-25	5.50
80387-16/20	Call	TM4164EL9-12	17	8250N-B	7.00
6264 LP-15	3.99	4116-200 or 150	Call	16450N	10.00

DISPLAY ADAPTERS

Color graphic card with printer port	$45/60
Paradise EGA autoswitch or EGA 480	150/170
Everex Micro Enhancer 1/2 size or with printer port	135/150
Mirage color graphic simulator card	90
Mono card with printer port/Mono graphic with printer port	49/55
Excelerator Turbo Board for XT and PC (Everex)	250
Sigma color 480	250
Everex the edge	230

I/O CARDS

Disk, 2 ser, 1 par with game & clock, 2nd ser opt.	$65
Ser, Par with clock (XT); ser with par port (AT) by Everex, 2nd ser opt.	55
Serial or printer card or serial with clock	25/40/40
Dual game port or clock card	28

MODEMS

300-1200 baud - internal/external	$69up/119
Qubie 2400 baud - internal or external	240
Everex ½ slot 1200 baud or 2400 baud - internal or external	85/175/225
Avatex 1200hc or 2400 (external) or 9600 baud external US Robotics	135/240/730

MEMORY UPGRADING

640K memory card with 0K	$35
Intel 286 above board w/512K	375
Everex multifunction card w/ 0K RAM	95
AT multifunction up to 1.5 meg w/0K.	135
AST-6 Pak w/ 0K (multi function card)	90
AST RAM Vantage up to 3 MB w/0K RAM (AT)	250
AST AT Advantage incl. ser, par w/clock w/128K up to 1.5 MB	385
Piggyback AST AT Advantage card w/512K	320
AST RAM Page with 256K (PC) EEMS	285
AST RAM Page 286 w/512K expandable to 2 MB (EEMS) AT	419
AST 6 Pak Premium incl. ser/par/clock can expand to 1MB-(EMS-XT)	245
Tall Tree J. Laser Plus (PC) or (AT) with 0K can expand to 3 meg	410/475
Everex RAM Card (AT) can expand to 3 meg (0K)	110
Everex EMS card for XT/PC with 0K - can expand to 2 meg	95
Everex EMS multifunction card w/0K RAM	100
Everex AT EMS multifunction card w/0K memory	145
Copy II PC Option Board.	89

KEYBOARDS/POWER SUPPLY

Maxiswitch AT style	$60
12 funct enhanced maxiswitch	75
5060 AT style.	50
5339 keyboard-12 funct enhanc	75
135/150/180 watt.	$50/60/70
200/220 watt	75/85

MONITORS/PRINTERS

Casper/Samsung	$87/79
Color or EGA monitor	249/375
NEC Multisyne/Nanao 8060S	Call
Taxan 770 multi-scan	545
Citizen MSP 10/15/20	$280/350
Citizen 120D/MSP 25	165/490
Epson Printers	Call

MOTHERBOARDS

256K motherboard w/0K - w/BIOS-8 slots	$70
640K motherboard w/0K - w/BIOS-8 slots.	85
640K Turbo motherboard, 2 layer w/BIOS-8 slots.	99
640K Turbo motherboard, 4 layer w/BIOS-8 slots.	120
Small AT motherboard w/Bios w/0K can expand to 1 MB (1 wait state) 12 MHz	309
DTK AT motherboard w/Bios w/0K can expand to 1MB (0 wait state) 10 Mhz	300
Small AT motherboard w/Bios w/0K can expand to 4 MB (0 wait state) 12 Mhz.	320

HARD & FLOPPY DISK CONTROLLER

DTC hard disk controller with cables #5160CX (RLL)	$80
DTC hard disk controller w/ cables	65
1.2 MB floppy controller with cable (XT)	69
Floppy disk controller (for 4 DR/2 DR) with cables	40/30
WD AT floppy & hard disk controller with cables	125
DTC AT floppy & hard disk controller w/cables (RLL)	169
1.2 MB floppy controller with cable (XT or AT)	75
Everex floppy & hard disk controller w/cable	119
20 or 40 meg hard card (plus development) 40 ns access time	Call

HARD & FLOPPY DRIVES

Toshiba 3½" disk drive kit (PC or AT int.) 720K/1.44 MB	$99/129
Teac 55BV/1.2 meg for AT-½ height drive or by Fujitsu	85/120/100
Fujitsu M2551A ½ height drive	75
Seagate ST225, 20 meg w/controller & cables.	279
Seagate ST238, 30 meg w/RRL type controller w/cables	300
ndon 1/2 height 10MB hard drive with controller and cables	175
Full height hard disk by Hitachi DK 511-5(42 MB) formatted	509
Full height hard disk by Vertek V185 (62MB) formatted, 28ms.	690
Full height hard disk by Seagate ST 251/ST 125	395/299
Wangtec 60 meg streamer tape drive with Sysgen controller & tape	490

MISCELLANEOUS

AT case/XT fliptop case	$75/33
Keyboard drawer/Computer desk w/keyboard drawer	33/69up
Logical Eprom eraser with timer (15 pcs at a time).	115
Logical Eprom eraser with timer (30 pcs at a time).	150
Logical Eprom eraser with timer (50 pcs at a time).	200
Logitech C7 mouse or 3.3 MS DOS or diskette storage box	75/85/6up

"Serving The Bay Area Since 1981"

MICROWARE EXCELTEK

100 Produce Avenue, Unit E
South San Francisco, CA 94080
PS Airport Business Park
(corner of Airport Blvd. & San Mateo Ave.)
Take the South Airport Blvd exit off of Hwy 101
T (415) 952-5375 • Fax (415) 952-3057
Monday-Friday, 9-6:30 Sat Call first
Canadian orders call (613) 737-5937 for pricing and availability

(415) 952-5375

All Parts 100% Guaranteed

Terms: For shipping & handling charge (under 1 lb.) include $2.50 for UPS Ground, $3.50 UPS Blue, $3.50 for 1st Class Mail COD. CA residents add 6.5% sales tax.

PC/XT/AT is a registered trademark of IBM Corporation

& MICROTIMES
PRESENT
THE FOLLOWING

COMPUTER
SHOWS & SALES

► Saturday 5/14
Santa Rosa Computer Show & Sale
Sonoma County Fairgrounds
Junior Exhibit Building
Take Sonoma/Sebastopol Exit
Follow towards Sonoma

New Show!

► Saturday & Sunday 5/14 & 15
Amiga - Commodore Computer Users Show & Sale
Santa Clara Convention Center
5001 Great America Parkway
Across from Great America

Special 2-Day Show!

► Saturday & Sunday 5/21 & 22
Oakland Computer Show & Sale
Special Atari Section!
Oakland Coliseum Exhibition Hall
Take Hwy 880 to Hegenberger Exit

► Saturday 6/4
Sacramento Computer Show & Sale
Cal Expo Building C
Take Business 80 to Exposition Blvd.

TREMENDOUS SAVINGS

NEW PRODUCTS
CLOSE OUTS
OVER STOCKED
HARDWARE
SOFTWARE
BARGAIN PRICES
MAJOR BRAND NAMES
COMPATIBLES AND CLONES
DISCOUNTERS
PERIPHERALS
WHOLESALERS
ALL UNDER ONE ROOF!
SAVE!

► ALL SHOWS 10-5 PM
Admission $5.00 Kids 12 & under FREE

EAST-WEST COMPUTER SHOWS
(formerly Golden Gate Shows)
CALL FOR INFO: (415) 388-8893

PC Transporter performs exactly like a typical PC clone in most respects. Lotus 1-2-3 and Flight Simulator ran without difficulty, but a few copy-protected games would not boot or crashed immediately after loading.

The PC Transporter software includes an elegant Control Panel, which is accessed by holding down the Shift key and pressing Caps Lock twice (an unusual enough combination that you don't have to worry about entering it by mistake!). The Control Panel consists of a series of nested menus providing total control over the system configuration. On a IIGS you can still interrupt PC Transporter to access Apple's Control Panel in the usual way; AE should have called their Control Panel something else to avoid possible confusion.

The next release of the PC Transporter software will reportedly include diagnostics, as well as the *AppleWorks* enhancements from AE's RamFactor memory card.

The 360K TransDrive was one of the noisiest disk drives we have ever heard. It sounded as though a small animal trapped inside was trying desperately to escape. As expected, it would not read disks formatted on a high-density (1.2 Mb) PC-AT style disk drive.

File Transfer

An MS-DOS program, TRANSFER.EXE, included in the PC Transporter utilities, can be used to move ASCII or text files to or from ProDOS. It can be executed immediately from the DOS prompt if you know all the path names, or run in a menu-driven interactive mode, which takes you through the process step by step. We had no trouble moving *AppleWorks* text files into *WordStar* (as "non-document" files).

Support

AE offers a one-year warranty on PC Transporter. On memory chips they offer an incredible five-year warranty. A technical support line (not toll-free) is manned from 9 to 5 (CST) on weekdays. Among Apple users, this company has a good reputation for standing behind its products.

Evaluation

If PC Transporter had been available a year earlier, it would have been a greater value. Today, a PC-XT clone, with medium-resolution CGA graphics and no hard disk, is only marginally viable as a home/business system, even if it coexists peacefully inside your Apple II. Moreover, most educational software looks and runs better on the old Apple II than on any PC, so the usefulness of PC Transporter in schools is questionable. The industry standard has moved very quickly to EGA graphics, a 20 Mb or larger hard disk and a fast 80286 (PC-AT class) microprocessor. Now a plain PC-XT can certainly do a great deal of useful work in almost any environment, but its capabilities are really not that much greater than an enhanced IIe running *AppleWorks*. To attract the typical user, a coprocessor system like PC Transporter has to offer significant additional power that the host system cannot provide in its "native" mode. Remember that most Apple II users contemplating an upgrade would rather have a Macintosh of any kind than the fastest, fanciest PC clone on earth. We are a loyal breed.

It would be a very good idea for AE to offer an inexpensive 20 Mb half-height hard disk as an option, installed in the TransDrive unit. Very few Apple II users can afford a ProDOS hard disk, since they are about twice the cost of equivalent MS-DOS drives. Running today's MS-DOS applications without a hard disk can be a torment. It might also be a good idea to offer a version of PC Transporter that could be installed inside the Apple IIc. This would be a packaging challenge, but AE's admirable Z-RAM memory card for the IIc demonstrates how much can be crammed into that little computer.

In the long run, AE will need to enhance the PC Transporter hardware in order to stay competitive with low-priced clones, at least to the level required for *Windows*, if not OS/2. Meanwhile, the package is an excellent "interoperability" solution for at least half a million people who enjoy Apple II computing at home, and endure MS-DOS at work. (Applied Engineering, PO Box 798, Carrollton, TX 75006. Sales (214) 241-6060; technical support (214) 241-6069.) □

Bay Area's Largest Software Selection

MSDOS Software

Microsoft PC Excel	$299
Microsoft Windows 2.0	69
Microsoft Windows 386	149
Microsoft Quick C	69
Microsoft Quick Basic	69
Microsoft Works	139
Microsoft Word	229
Ansa Paradox 2.0	439
Delux Paint II	69
Streets On Disk	89
Symantec Q&A	239
Foxbase Plus	229
Foxbase Plus 386	349
Ventura Publisher	499
Publishers Paintbrush	195
PC Paintbrush Plus	109
Desq View	99
Wordstar Release 4	249
Designer	499
Multimate Advantage II	259
Easy Working Writer	9
Splash	69
Front Runner	139

MAC Software

Ready Set Go 4.0	$339
Image Studio	319
Adobe Illustrator	319
Reflex Plus	169
Pixel Paint	279
Microsoft Word	249
Microsoft Excel	249
Microsoft Works	199
dBase Mac	299
Fastback Plus	69
Suitcase	49
Quickeys	89
Turbo Pascal	69
Write Now	119
Deluxe Music Construction	79
NFL Challenge	69
Dollars and Sense	99
Studio Session	65
Full Paint	69
Jam Session	39
Desktop Express	99
Mind Write	99
Trapeze	179

. . . plus much much more . . .

Plus AT&T Computers and Networks

6386 WGS 40Meg System	$4680
6312 WGS 40 Meg System	2530
6300 WGS 20 Meg System	1729
Starlan Network Access Unit	299

Plus Laptops

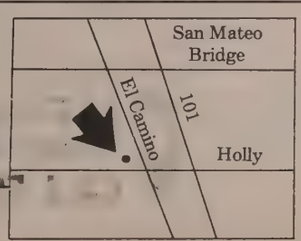
Toshiba T1000	$849
Toshiba T1200	2395
Toshiba 5100	5500
NEC Multispeed EL	1595
NEC Multispeed HD 20 Meg	2395

Plus More Hardware

Vega VGA	$349
Intel Above Board/286	339
Practical Modem 2400	179
NEC Multisync II	599
NEC P6 Printer	499
NEC P7 Printer	699
Citizen 180D Printer	199
Amdek CD Rom Laserdrive	649
Complete Hand Scanner	199
Complete Answering Machine	289
NEC Multisync GS	199

Friendly Software Store

Price subject to change without notice.



376 El Camino Real, San Carlos, CA 94070 415-593-8275

101 Adventures In The Add-On Market

E. Michael Lunsford And Macropac International

By Mary Eisenhart

E. Michael Lunsford's career as a software entrepreneur had an unlikely beginning some years back when his employer drew a paper spreadsheet, pointed him to the PC on the desk, and said, "Make me one of those." Thus forced, he discovered the joys of *Lotus 1-2-3*.

"I really got into *Lotus*," he now recalls. "As the business manager I was doing overhead budgets, GNA budgets, trend analysis, marketing forecasts, and *Lotus* was perfect for what I was doing."

However, it took him a while to attain true power-userhood. "It took me a year and a half before I got into macros. Every once in a while somebody would mention macros to me, and I'd say, what's that? I just could never see the benefit — I'm a fast typist, who needs this?

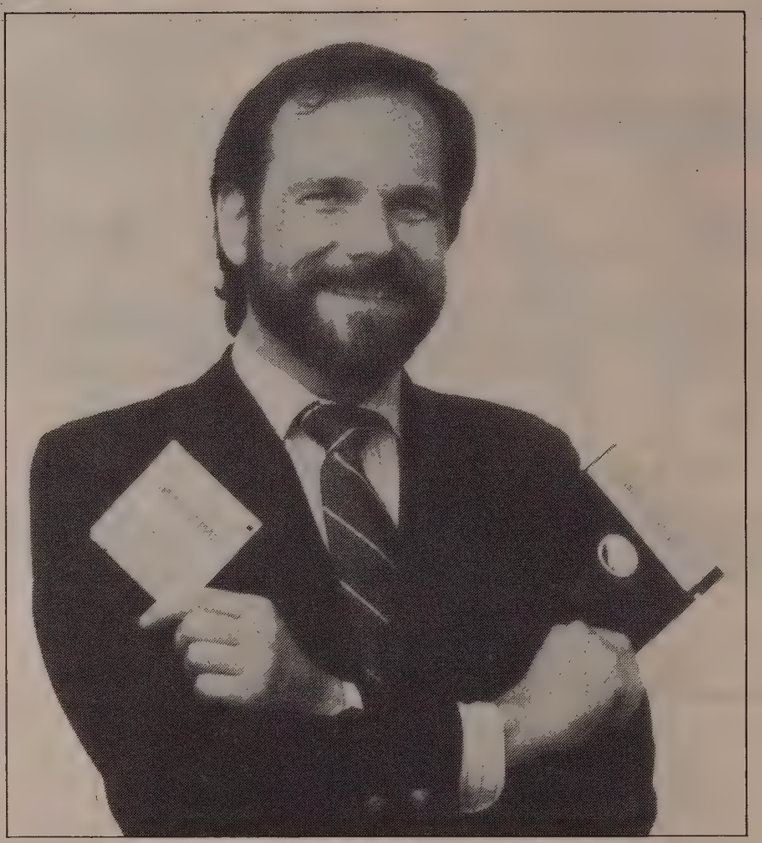
"So one day I was typing for about the hundredth time the sum formula at the bottom of the column, and I suddenly realized that you could turn that into a macro. So it would type it for you, and go up and get the range for you..."

As a result of this moment of epiphany, Lunsford and the *Lotus* macro language became close friends. However, it puzzled him that he couldn't just go out an buy a disk with commonly-used macros — "Every time I'd spend an hour and a half trying to figure out how to write a particular macro, I'd think that at least several hundred, if not thousands, had already done this."

Perceiving a possible marketing niche here, Lunsford proceeded to write macros, eventually reaching the nice-sounding number of 101. He copied a few disks and went off to the local swap meet, where he rented a $40 booth and set up his computer and printer.

"I was selling it for $18.78 a disk," he says of his modest beginnings, "which comes to $20 even with tax. I figured if I sold ten, that's $200, that would more than pay for my $40 table.

"I sold out of the ten in an hour and a half. So I went two booths down and bought some disks from a guy down the way, and I was copying disks to sell to other people. I had my printer going, I was printing out labels, and people started waiting in line for me to finish making the copy. Because they were waiting in line, other people would see this and say, oh, this must be something really exciting. So they got in line too, and the line became longer and longer and longer...So I ended up that day selling $1200 worth of product."



Macro maven E. Michael Lunsford parlayed the success of his Lotus macros into a thriving publishing house.

Encouraged by this auspicious beginning, Lunsford took out an ad in *MicroTimes* (itself then a youngish publication), which brought in enough business to finance an ad in *Lotus* magazine. Orders have been rolling in ever since, and Macropac International, for so he had named his company, has prospered with add-on products for popular PC and Macintosh business applications.

Lunsford himself wrote the next package as well, *101 Macros For Symphony*. *101 Macros For Excel* was released in January 1987, the work of one of Lunsford's Mac-programming neighbors. At around the same time, he was approached by Computer Associates, the publisher of *SuperCalc 4*, and asked to create 101 Macros for their product.

Macropac's other current offerings include *101 Macros For WordPerfect*, *101 Utilities For dBASE III+*, *101 Macros For Excel PC*, and *101 Tips, Tricks, And Techniques For Lotus 1-2-3*, all the work of other authors and published by MacroPac. Currently in the works are products for *HyperCard*, DOS, and *Modern Jazz*.

According to Lunsford, publishing add-on productivity tools for well-known software has a number of advantages. "One of the really nice virtues is immediate product recognition. If one comes out with a product called *Ability* or *Paradox* or *Affinity*, you don't know what it does until you've been educated about it. I don't have that problem. I can say 101 macros for...and give the name of some already-famous product, and there's instant recognition, probably, about what kind of things it does, and this feeling of, oh, this is going to enhance that primary program I already have.

"And I can go after an existing, known customer base and say, here are productivity tools that will make your life easier."

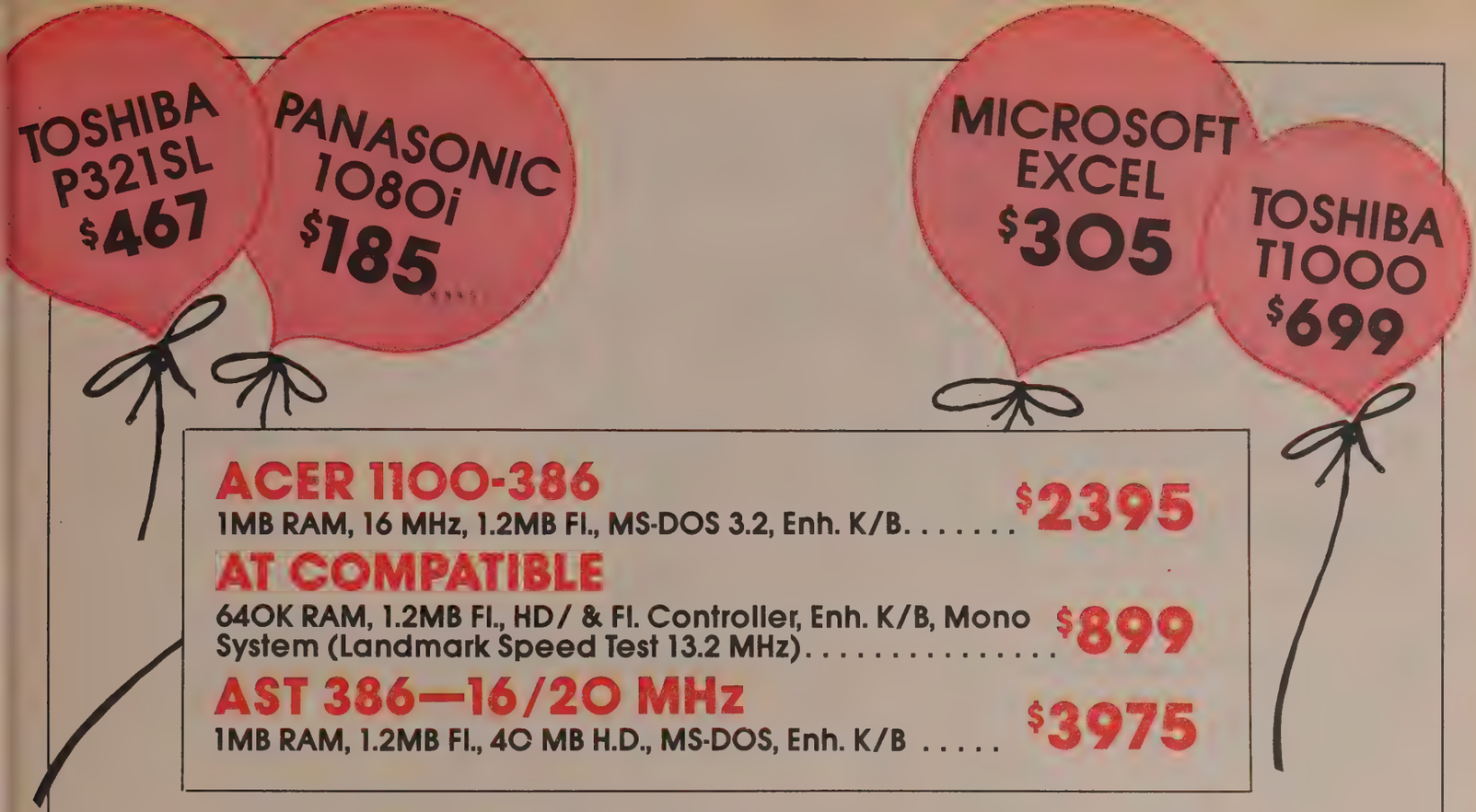
Lunsford is also proud of the fact that his products offer genuine learning opportunities to their users in that they provide the means for creating custom tools. "We're giving open architecture, the ability to use these things as building blocks, as modules, as working examples. We include documented source code with all our products, so people can go in, see exactly what's happening, read the code. You can go, look at the macro, see how it's done, modify it slightly or rewrite it."

From a distribution standpoint, he says, the add-on business is a dream; his products are featured in the Lotus, WordPerfect and Microsoft catalogs, in addition to being available from retail establishments. And, he adds, he's in an enviable position for attracting authors of new products. "If someone who knows, say, *PageMaker*, really well, has a whole lot of style sheets for it, feels that he has a marketable product and is looking around for a software publisher, he's likely to come to me."

And, if he thinks the product will appeal to a large enough audience, Lunsford is definitely interested in publishing other authors' work. "Basically I make my decision based on what's the customer base out there. If there's a large enough customer base out there to warrant 101 productivity tools for that product, then I'd do it."

Another important criterion: "I would look at the product and see that it wasn't fluff, because I want something that people are going to value. I don't want somebody returning a product and saying it's fluff. I won't publish a product like that. I want to be able to stand behind a product and to be able to say that I really am providing productivity tools that people really will use, and I'm providing open architecture that they can learn from."

Nothing's perfect, however, including the add-on niche. "Being known as Mr. 101 Something For Something means that I'm not going to get the next *HyperCard* or *4th Dimension* author coming to my door asking me if I will be their publisher." And while he's committed to the productivity-tools business, he doesn't rule out the possibility of something completely different. "I'm always looking for new opportunities and new things to get into. I wouldn't have a moral crisis over a very hot game, and I guarantee I would look. If it looked good, I know that I could market it." (Macropac International, 408/996-8143) □



ACER 1100-386
1MB RAM, 16 MHz, 1.2MB Fl., MS-DOS 3.2, Enh. K/B..... $2395

AT COMPATIBLE
640K RAM, 1.2MB Fl., HD/ & Fl. Controller, Enh. K/B, Mono System (Landmark Speed Test 13.2 MHz)..... $899

AST 386—16/20 MHz
1MB RAM, 1.2MB Fl., 40 MB H.D., MS-DOS, Enh. K/B $3975

CALL FOR WYSE 286, COMPAQ 386/286, AST 286/386, IBM, LEADING EDGE (ALL MODELS) & OTHERS

Printers/Plotters/Digitizers

NEC P6/P2200	449/339
Okidata 292E/293E	409/535
Citizen 120D/MSP15	149/339
Toshiba P321SL/341SL	519/649
HP Laser Series II w/Toner	1655
Fujitsu DX/DL Series	Lowest
Epson LQ850/LQ1050	Lowest
APLS ALQ 224/324	Lowest
IBM Proprinter II XL/XL24	Lowest
Panasonic 1080i/1091	189/205
Okidata Laser 6	1275
Toshiba Page Laser 12	Lowest
NEC 890 w/PS	Lowest
AST Turbo Laser w/PS	Lowest
HP 7440	1039
HP/DEST/DATACOPY Scanner	Lowest
Houston Instruments/Ioline/Calcom/Enter/ Zeta Plotters	Lowest
Summa 12x12 Digitizers	369
HP Rams 1MB/2MB/4MB	Lowest
Bernoulli Box	Lowest
Brother	Lowest
Dynax/Fortis	Lowest
Ribbons & Accessories	Lowest

Call for others.

Monitors

NEC Multisync II/Plus	Lowest/910
Sony Multiscan	595
Amdek 410A/Samsung	139/79
Diamond Scan Multisync	495
PGS Ultrascan	Lowest
Xerox Full Page w/CC	Lowest
Paradise 480/Genoa VGA	169/239
Magnavox EGA/Multisync	379/495
Everex EGA/Nanao/Quimax 14"	Lowest

Call for other EGA Monitors and Adapters.

Tape Backups & Hard Disks

20MB Int/Ext	329/429
40MB Int/Ext	395/495
60MB Int/Ext	745/699
ST 251	Lowest
ST 225 Kit	259

Call for others.

Modems

Hayes 1200B Int/Ext	275/275
Hayes 2400B Int/Ext	409/409
Hayes 9600 Int/Ext	Lowest
Everex 1200B Int.	89
Everex 2400 Int/Ext	179/209
US Robotics	Lowest
UDS	Lowest
Ventel	Lowest
Ray Cal Vadic	Lowest
Migent Modem for Laptops	129

Call for others.

Miscellaneous

Power Supply XT/AT	59/99
AST Boards	Lowest
Intel Above Boards XT/AT/386	Lowest
Everex Boards	Lowest
MS Mouse/PS2	95
HP Laser 1MB Mem.	279
Logitech C7	79
Math Co-processors PC/AT/386/20	In Stock
Keytronics Keyboard	Lowest
Custom Cables	Lowest
5¼" Ext. Dr. Laptop	255
Accelerator Board PC/XT/386	Lowest
RAM Chips 64K/256K/128K/386	Lowest

Call for other items not listed.

Laptops

Zenith 181	1575
Zenith 183/10/183/20	2269/2595
Toshiba 3100/20	2995
Toshiba T1000	829
Toshiba T1200	Lowest
NEC Multispeed EL/HD.	1545/2396

Call for others.

Software

Ventura	569
Word Perfect 4.2	189
MS Word 4.0	205
Quattro	129
MS Excel	329
PC to Laptop Transfer Utility	59

Call for all other software.

Free delivery on all products in San Francisco/East Bay.* Free delivery/pickup and estimates on all repairs. Call in for our free catalog!

5835 Doyle Street
Suite 101
Emeryville, Ca 94608
(415) 658-1433
HOURS: M-F 9:00 A.M.-6:00 P.M.
SAT. 10:00 A.M.-5:00 P.M.
FAX (415) 658-7339

MICRO TECH International

WYSE AST RESEARCH INC. AUTOCAD ALLOY

605 Market Street
Suite 510
San Francisco, CA 94105
(415) 546-4188
HOURS: M-F 9:30 A.M.-5:30 P.M.
FAX (415) 546-5187

* Minimum $400 purchase. Prices subject to change and are good while supplies last. Prices are cash only. Add 5% for terms.

ZCOMM And ZMODEM

Shareware On The Cutting Edge Of Telecommunications

By Lenny Bailes

When average computer users need to transfer electronic information over the phone, usually they gravitate toward the simplest possible method. If the communications software says "Just type my name and we'll fly," so much the better. But such a user can often be puzzled when his neat, pull-down software mysteriously aborts random transfers; "...sending — Ack! Ack! Ack! What's wrong?"

Some people do nothing with their modems for awhile but call simple PC-based bulletin board systems. They have less difficulty with mysterious problems until the day they involve themselves with calling other cities via money-saving networks. Then they are plagued by slow transfers, timeouts, and aborted transmissions.

Chuck Forsberg is a man who's decided he's had enough of this. He's invented communication software and transfer protocols which he claims are up to a billion times more accurate than traditional file transfer procedures.

Secrets Of X, Y, Z

Many modem users are aware that binary files cannot be sent over a telephone line in the same way as ASCII text. They know that XMODEM is something which can send "programs" and check to see whether data is received correctly. Some more advanced users have noticed that there are also selections in their software called "Y-MODEM," "YMODEM-Batch," or "KERMIT."

"YMODEM" is actually a misnomer for a variant of the XMODEM protocol which can send blocks of data in 1024-byte packets with an advanced error correction technique called Cyclical Redundancy Checking (CRC). The original XMODEM invented by Ward Christiansen sent its data in 128-byte blocks, which, when it was invented, was state of the art and economical on RAM usage. "True YMODEM" is the name copyrighted by Chuck Forsberg for his PRO-YAM (Yet Another Modem) software. "True YMODEM" combines the larger packet size and 16-bit CRC with the ability to send or receive pathname information and do multiple file transfers. Some comm programs have an equivalent of this called "YMODEM Batch."

"KERMIT" is a protocol which was developed at Columbia University for use with mainframe computers. Mainframes have difficulty accepting the 8-bit characters transmitted by XMODEM and other micro protocols.

In the past year Forsberg has added ZMODEM to the alphabet soup. ZMODEM has delighted computer users capable of wading through cryptic documentation and puzzled some who just like to point and click. But ZMODEM is to other micro protocols what the 80386 CPU is to the 8088. To begin with, it's 15 to 20 percent faster than other protocols. Then, ZMODEM automatically paces itself to your computer's capability to process information. The result of this is fewer timeouts and acknowledgment requests. On a timesharing network like Tymnet or PC Pursuit, this dramatically improves upload and download times and avoids loss of carrier signal.

ZMODEM has batch capabilities more powerful than YMODEM, at least the equal of *Crosstalk*'s proprietary protocol. Filenames need be entered just once by the requesting system. Entire directories can be transferred automatically with selective updating capability. If you're disconnected or run out of time on a particular system, ZMODEM can do crash recoveries on a subsequent call, resuming transmission to a partial file right where it left off. ZMODEM uses 32-bit CRC. This makes its error checking theoretically a billion times as accurate as 8-bit Checksum.

ZMODEM is distributed by Forsberg's Omen Technology in three flavors. There are two full-fledged communications packages for MS-DOS and one small module. The small module can run by itself or be incorporated into any communications system which allows escape to a DOS shell. Source code is also available for these programs, together with a script which will automatically load and compile them online in a UNIX environment.

The full packages support SEALINK, TELINK, XMODEM, YMODEM, WXMODEM, and CompuServe B protocols, with options to fine tune each protocol for optimum performance with individual systems. Forsberg claims his "Cybernetic Data Recovery" feature will allow his programs to continue to function in the face of line noise which renders other software inoperable. His statistical testing data is available on Omen's free BBS system, appropriately called "Tele-Godzilla."

ZCOMM, the full comm package, and *DSZ*, the small module containing just X,Y and ZMODEM protocols, are distributed on Tele-Godzilla and other BBS systems as shareware. Registration with Omen gets you a serial number and a disk full of software. The software inserts your serial number, removes the introductory screens, and adds features to the programs. The third package, PRO-YAM, is commercially distributed and has a superset of ZCOMM options. Forsberg calls PRO-YAM "flying without the restrictions of super-saver fares." It contains high-powered password protection, data encryption capabilities and a slightly more powerful script language than ZCOMM has.

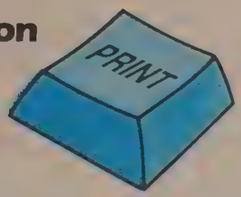
ZCOMM and *PRO-YAM* are programs which will be enjoyed by the same people who constantly soup up their hard disks and replace components of their stereo systems in an attempt to achieve purer sound. If you are the type who admires powerful programming languages and can

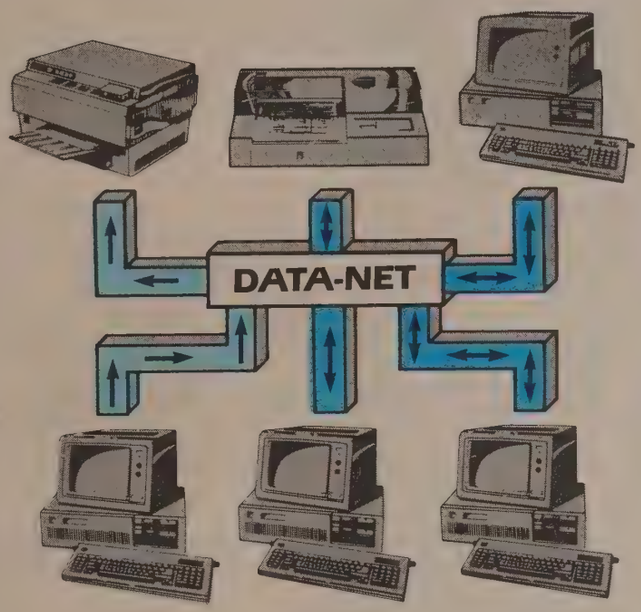
DSZ HELP SCREEN:

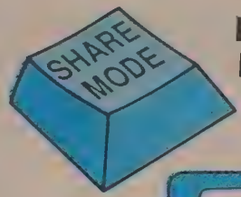
```
Omen Technology Inc, P.O. BOX 4681, Portland OR 97208
NO Version of DSZ may be modified or sold without the prior written
consent of Omen Technology
Type space to continue
Usage: dsz [CON] [port 1...8] [speed N] [D] [d] [handshake both]
  [restrict] comm
and
  CON          open device CON for message output.
  port         DSZPORT (COM1) and current speed are default.
  D            Drop DTR if carrier is lost
  d            disable carrier dropout detection
  handshake    onboth CTS Flow Control Selection
  pxN          (set parameter x to N)
  sz [-abfnprt+yS] [-w[N]] [PREFIX=p ONAME=n] afn ...
  sb [- fkt] [PREFIX=p ONAME=n] afn ...
  sx [-kt] ufn
  rz [-abnprt+yS] [dir] [file ...]
  rb [-abgt+yS] [dir] [file ...]
  rx [-abct+y] ufn
  t            (Talk with ZMODEM Auto d/l, F1=exit
               F3=ymodem d/l)
  dsz sz -w zcom*.zoo (ZMODEM send, 4096 window for
                       1200b PC Pursuit)
  dsz sz -r giant.arc (ZMODEM crash recovery: resume
                       interrupted transfer)
  dsz sb -t *.arc (YMODEM send, then talk)
  dsz sb -k *.arc (YMODEM-1k send)
  dsz sx -k naughty.bit (XMODEM-1k single file send)
  dsz rb -y (YMODEM receive, erase old file if any)
  dsz rb -g (YMODEM-g receive)
  dsz rz C:/uploads (ZMODEM receive with specified directory)
  dsz rx -c foo.bar (XMODEM-CRC or XMODEM-1k single file recieve)
  Please Refer to the ZCOMM manual for commands, parameters,
  and options
```

Make a few key moves into networking

Simultaneous Operation

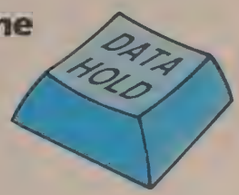


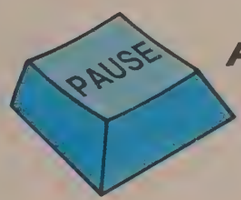




DATA-NET Routes Print Data to the Directed or Next Available Printer

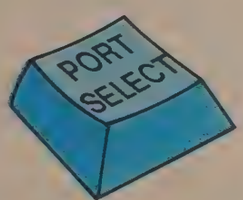
DATA-NET Will Hold the Data You Send to Memory Until You're Ready to Print



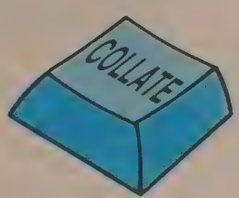


Automatic or Manually Controlled Pause Command

DATA-NET gives you all the right connections for PERIPHERAL SHARING

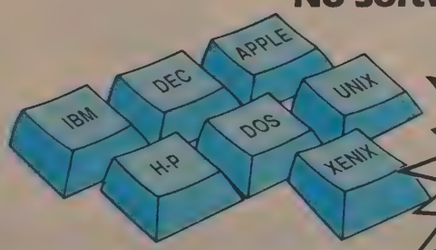


Connect Computer to Computer or Multiple Computers to a Printer



Copy or Collate

IMC Data Manager Products Are Transparent to the User — No Software to Load!



Prices Start From Only $495

Call for Local Dealer.
OEM & Corporate Inquiries Welcome.

800-537-5999

Integrated Marketing Corporation

See us at COMDEX/Spring '88
May 9–12, 1988
Georgia World Congress Center
Atlanta, GA
Booth #115

1031H East Duane Avenue, Sunnyvale, CA 94086
Telephone: (408) 730-1112
Telex: 5106018576 FAX: (408) 730-1452

INTERFACE TOOLS

Manufacturing & Marketing of "Interface Tools"

patiently compose scripts, you'll find that *ZCOMM* can be a complete BBS system for you; it can do anything that *PROCOMM* or *QMODEM* can do, it will function under adverse telephone line conditions, and you can fine tune it to your heart's content.

However, if you've forgotten which phone number you want to call, you'll have to issue commands to view the program's phone directory as an ASCII file, scroll through the dialing entries interspersed with script commands, quit back to the *ZCOMM* command line and enter a call command, filling in enough significant letters to distinguish the entry you want to dial. All of *ZCOMM*'s options are command driven.

Using DSZ

DSZ.COM is the program which has been a national hit on the PC BBS circuit. Easily added to *OPUS* and *RBBS-PC*, *DSZ* is now also implemented on BIX. When the host system runs *DSZ*, any caller can take advantage of ZMODEM's batch and recovery features by downloading and installing *DSZ* in their comm program of choice.

DSZ is called from a comm program in one of three ways: a) user escapes to DOS and invokes *DSZ* from the command line; b) user activates a "run-a-program" key from a comm program (which then shells to DOS and invokes *DSZ*); c) user chooses method a or b to call an intermediary interface which issues multiple *DSZ* batch files. Because *DSZ* has so many command line options [see encl. printout of opening screen] the third method is the one preferred by many users. Any BBS that features *DSZ* and *ZCOMM* for downloading will also have a number of interface programs for use with *PROCOMM, QMODEM, TELIX, PC-Talk*, etc. My favorite such program is *ZRUN.COM*, which works well with *PROCOMM* and even with *MIRROR*. (*BOYAN* has *DSZ* batch files included in its interface).

Some people are scared away from *DSZ* when they read its complex introductory screen and densely packed documentation. For most uses, however, most of the optional parameters can be ignored. If you're ambitious, you can find fuller explanations for them in the *ZCOMM* manual. The basic switches for *DSZ* are:

DSZ Port Speed Talk Protocol.

The default port is COM1 and the default speed is 1200 bytes per second. The protocols are rx (receive by XMODEM), rb (receive by YMODEM), and rz (receive by ZMODEM). Send a file is sx, sb or sz. If you choose YMODEM or ZMODEM as your transfer protocol you need not specify a filename. *DSZ* reads the filename from the host system. If you choose XMODEM, you must follow the protocol switch with a filename.

Command Line Use

C› DSZ Port 1 Speed 2400 rx Myfile will commence an XMODEM download of Myfile to the directory from which *DSZ* is called over COM1 at 2400 bps.

C:COMM› DSZ Port 2 rz will tell *DSZ* to use the ZMODEM protocol over COM2 at a default speed of 1200 bps and receive any files you have previously requested from the host system, placing them in the COMM subdirectory of drive C

In each case, *DSZ* will terminate and return you to the command line after the transfer is complete. You can then exit the DOS shell back to your main communications program.

The t (talk) parameter enables *DSZ* as a terminal program before or after a transfer: **DSZ t rz** will allow text and messages to continue to flow to your screen from *DSZ* and automatically begin a ZMODEM transfer whenever you request it from the host. After the transfer, *DSZ* will continue to function as a terminal program until you quit it with a function key.

Use With A Shareware Interface

Small programs like *DSZ-ZAP, ZRUN, HOTKEY*, and many others function by presenting you with a menu from which you select upload/download and transfer protocol. These programs then invoke a user-configured batch file for each menu choice. If you choose "upload a file by Y-MODEM" this will trigger something like:

C›rb.bat DSZ port 1 speed 1200 rb %1

If the intermediary program is called with a user hotkey in your primary program, it automatically shells to DOS, calls *DSZ* for the file transfer, and then exits back to your primary communications software when finished.

Use As An Add-In Protocol

Many new communications programs allow you to enter a *DSZ* batch file as an external protocol, to be invoked from the same menu as all of the internal ones. This works just like the user hot key approach in older programs. If you call *DSZ* directly, you must use a different batch file for each individual transfer chore. You can also call an intermediary program as above, which selects a batch file for you.

Standalone Use

DSZ can also be used as a stand alone communications program with the talk option. It will present you with an OK prompt and accept single Hayes dialing commands.

Why Use Two Programs Instead Of One?

DSZ gives you complete control over

continued on page 158

The A·C·A·Demy

provides CAD services for beginning, intermediate and advanced CAD professionals. On-site training is provided for MS-DOS, AutoCAD, A/E/C, and AutoLISP, or you may choose scheduled classes in our Sausalito lab. For more information, call us at

The A·C·A·Demy

(415) 331-9466

TM

Communication & Industrial Cards for XT, AT

IEEE-488 Card
B.S. Card (3270 emulation)
SDLC Card (Synchronous Data Link Control Communication)
ADDA-12 Card
SUPER ADDA-8 Card
MULTI D/A-8 Card
MULTI D/A-12 Card
RS-422 Card
RS-232 REPEATER
RS-232/422 CONVERTER
MULTI-SERIAL-8 (run w/MultiLink or run w/Microsoft/SCO/XENIX)
8255 I/O Card
INDUSTRIAL I/O Card (16xRelay OUT, 16xPhoto Couple IN)
UNIVERSAL Card (w/decoding circuit)
PC-EXTENSION UNIT (w/3x62 Pin Slot)

General Purpose Card

AT MotherBoard(12MHz,OK)	$309
BABY AT(12MHz,4M RMS,OK)	289
PC GAME I/O Card	15
PC PRINTER Card	15
PC RS-232 Card	21
MONO GRAPHIC/PRINTER	44
PC Driver Card	21
AT Parallel/Serial Card	48
PC 512K RAM Card	21
AT 128K RAM Card	52
AT 2M RAM Card	79
MODEM -- 1200 BAUD(INT.)	65
MODEM -- 2400 BAUD(INT.)	148

* call for more information *
prices subject to change
H&R Int'nal Co. (408)733-3026
21060 Homestead Rd, Suite 202
Cupertino, CA.95014

MITSUBISHI ELECTRONICS

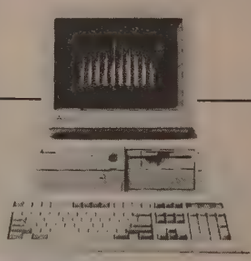
MP 286 and MP 386

MP 286
- Small 15 x 15" footprint
- 80286-based microprocessor
- MS-DOS® compatible
- Assembled in the U.S.A.
- 6 slots for expandability
- Multiple system configurations
- 12 MHz, 640K RAM, serial and parallel ports
- One-year warranty

Call for Price

MP 386
- Intel 83086 processor at 16 MHz
- OS/2 ready, System Cache
- 10 expansion slots, 2-32 bit
- Multiple system configurations
- Supports mast Xenix® based applications
- 1 MB memory, serial and parallel ports
- 101 sculpted keyboard
- One-year warranty

Call for Price



Cypress Distributing Company

560 Lincoln Avenue
San Jose, CA 95126
(408) 297-9800

22186 Rim Pointe
El Torro, CA 92630
(714) 770-7244

2670 Truxel Road
Sacramento, CA 95833
(916) 646-1955

10 Net Datasouth Indtech Ampex
C. Itoh Century Data Systems Packard Bell
Personal Computer Products Panasonic Seikosha
Moniterm Star Micronics Rutishauser Canon Fujitsu

Enhanced Micro Systems: Your Multi-Source Solution

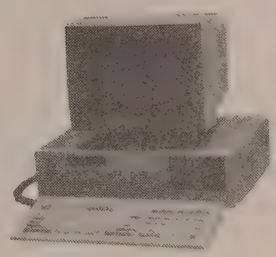
XT TURBO-10 MHz MONO SYSTEM

Features:
- XT Turbo dual-speed 4.77/10 MHz motherboard
- AT jr. case with 150W power supply
- 256K RAM Installed
- Two ½ ht. 360K floppy disk drives
- Floppy disk controller
- Monochrome graphic card w/printer port
- High Resolution monochrome monitor
- AT style keyboard
- FCC Class B Approved (4.77/8 MHz less $20)

$525

386 SYSTEM 16 MHz or 20 MHz

Features:
- 100% IBM AT compatible
- 1 MB 32-bit RAM
- 1.2 MB floppy drive
- Floppy/Hard-disk controller
- Enhanced AT keyboard
- 200W power supply
- 7 expansion slots
- AT style case
- 20 MHz optional



CALL FOR BEST PRICE

AT TURBO-10 MHz 0 Wait State MONO SYSTEM

Features:
- AT Turbo dual-speed 6/10 MHz motherboard
- AT case with 200W power supply
- Zero wait state
- 512K RAM installed
- One ½ ht. 1.2 MB floppy disk drive
- HD/FD Controller
- Monochrome graphic card w/printer port
- High resolution monochrome monitor
- AT-compatible keyboard
- FCC Class B approved

$880

AT 12 MHz SYSTEM. $995
0 Wait State

NANAO 8060S Monitor Multi-scan

PLUS Super EGA Board

- IBM personal system II compatible
- IBM PGA, EGA, CGA compatible
- 15.5 to 35 KHz horizontal 50 to 80 Hz vertical scan
- Super Hi-Res (820x620) 14" inch multi-scan color monitor
- 0.28 mm dot pitch CRT (8060s)
- Flexibility meets your various application requirements from word processing to CAD/CAM
- Free monitor stand

Monthly Special **$675**

Add-On Cards & Peripherals Call For LOW LOW Price!!

MONTHLY SPECIAL

386 Motherboard
- 20 MHz or 16 MHz
- 1 MB expandable to 2 MB on Board
- 387 Socket On Board

CALL

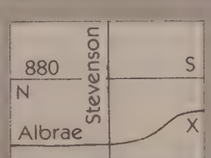
EMS 12 MHz 0 Wait Motherboard
- Expandable to 4 MEG
- XT Size Footprint

CALL

EMS
Enhanced Micro Systems Inc.
(415) 659-8784
40547 Albrae St. (Stevenson & 880)
Fremont, CA 94538

DEALER INQUIRIES
CORPORATE P.O.'s
WELCOME

MasterCard VISA

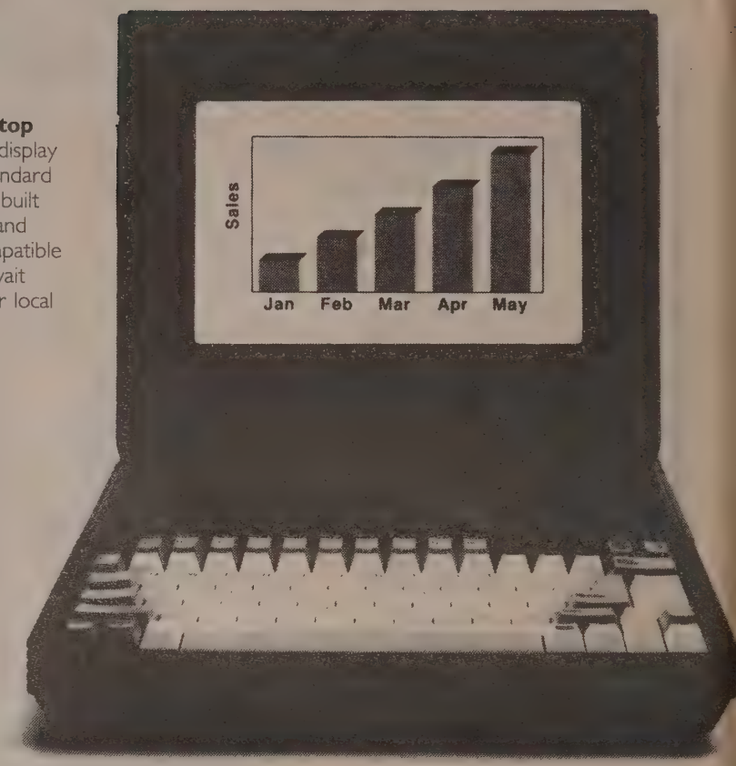


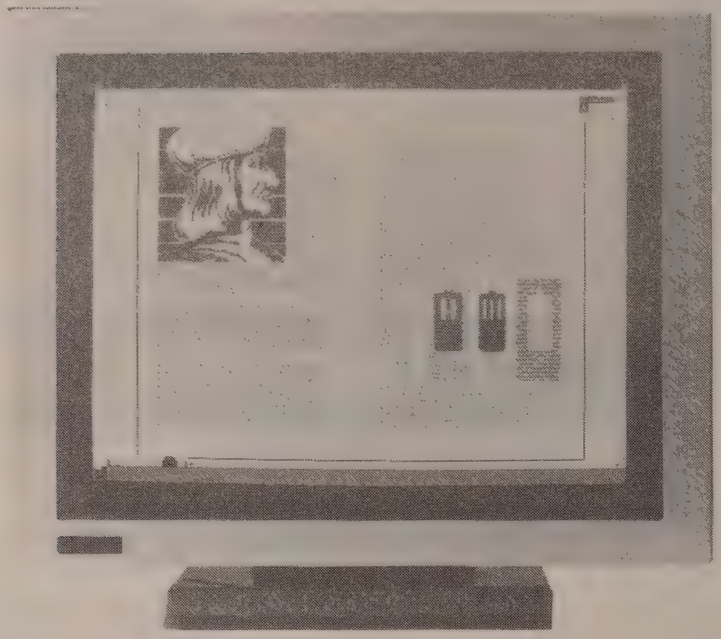
PRICES SUBJECT TO CHANGE W/O NOTICE

AT/XT is a trademark of IBM, Inc.

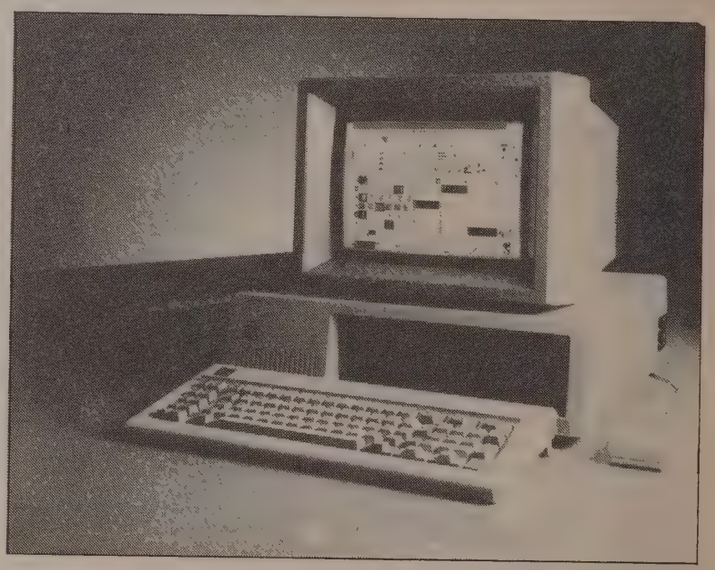
BUYERS GUIDE

The Kaypro 2000+ Sports EGA Standard Graphics In A Laptop
The Kaypro 2000+ from Kaypro Computers features a liquid crystal display that has cold cathode backlighting making the screen 50% brighter than standard laptop displays. The display also supports EGA graphics. The 2000+ has a built in modem, two 3.5 inch floppy drives, ports for a 360 KB floppy disk drive and external monitor and a complete bundle of software. The 80C88 compatible V-20 microprocessor is switchable from 4.77 MHz to 8.0 MHz with zero wait states. There is also a socket for an 8087 math co-processor. See your local Kaypro dealer for more information.

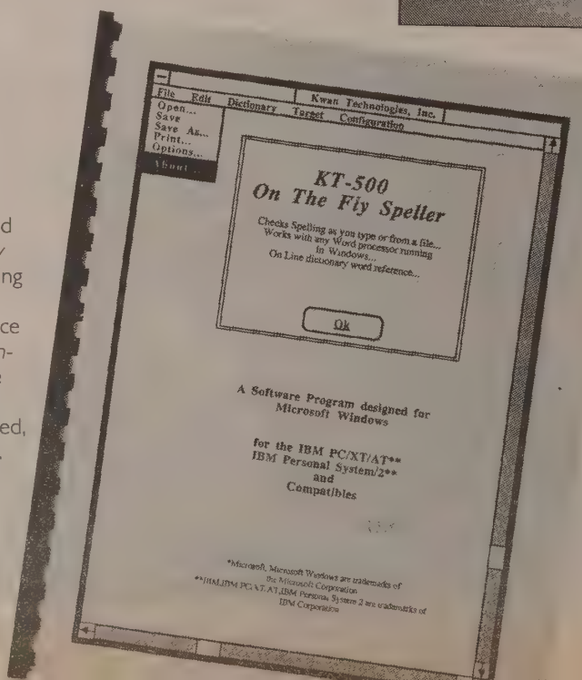




Thomson Monitor Provides Desktop Publishers With Crisp Page Display
The Thomson 980W is a 20" monitor that displays black text on a paper white background at a resolution of 1024 x 768. It shows two full pages at a time and is designed to have resolutions clear enough to provide true what-you-see-is-what-you-get. Combined with Thomson's Advanced Graphics Controller board, the 980W provides a resolution four times greater than the Macintosh. It will also re-draw screens 22 times faster than a standard EGA display. ($1,095.) Thomson Systems Corporation, 5731 West Slauson Ave., Culver City, CA 90230. In CA: (800) 237-9483.



On The Fly Spell Checker From Kwan
The *KT-500, On The Fly Speller* from Kwan Technologies is a spell checker specially designed for use with Microsoft *Windows. On The Fly Speller* reads your keystrokes directly, checking your spelling as you type. It can also read a text file from disk and check it for spelling errors. Since it runs concurrently with other programs in *Windows, On The Fly Speller* lets you use an on-line dictionary that will look up a word any time you wish. ($89.95) Kwan Technologies Incorporated, P.O. Box 64160, Sunnyvale, CA 94086-4160.



New Music Program For The IBM PC From Voyetra
M/pc is a music program for the IBM from Voyetra which is virtually identical to the original version of *M* for the Macintosh. *M/pc* reads and writes music files in Voyetra's Sequencer Plus format, as well as the standard MIDI file format. It can be combined with any member of the Sequencer Plus family to provide a powerful MIDI editing, sequencing, interactive-composing environment for the IBM PC. ($249.) Voyetra Technologies, 333 Fifth Ave., Pelham, NY 10803. (914) 738-4500.

The Computer Store

Now 2 Locations To Serve You

AT 386 16MHz 0 Wait

$1999

6, 10, 12 MHz 0 Wait System Clock Speed
1 MB RAM (Expandable to 8MB on Board)
8 Expansion Slots (3 8/16 bit, 4 8 bit, 1 32 bit)
200 watts Power Supply (110/220V AC)
1.2MB Floppy Drive
Hard/Floppy Drive Controller
101 Keys Enhanced Keyboard
Hi-Res (720x350) Amber Monochrome Monitor
Monochrome Graphics Card (Hercules Compatible)
Printer Port
Socket for 80287 Math Co-Processor Optional socket for 80387
Battery Back-Up Clock and Calendar
Slide-In Case With Reset & Turbo Button & LED

ONE YEAR WARRANTY PARTS AND LABOR

AT 10 MHz **$949**

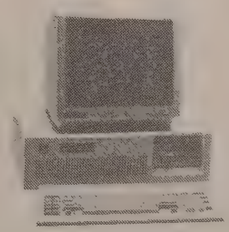
AT 12 MHz **$1049**

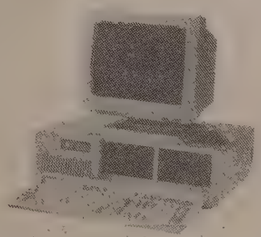
6 and 10/12 0 Wait System Clock Speed
512KB RAM (Expandable to 1MB on Board 640/384KB)
8 Expansion Slots
200 watts Power Supply (110/220V AC)
1.2MB Floppy Drive
Hard/Floppy Drive Controller
101 Keys Enhanced Keyboard
Hi-Res (720x350) Amber Monochrome Monitor
Monochrome Graphics Card (Hercules Compatible)
Printer Port
Socket for 80287 Math Co-Processor
Battery Back-Up Clock and Calendar
Slide-In Case With Reset & Turbo Button & LED

ONE YEAR WARRANTY PARTS AND LABOR

THIS MONTH SPECIAL
Complete 8 MHz AT System

512 K RAM **$849**
8 Expansion Slots
200 watts Power Supply (110/220 V AC)
1.2 Mb Floppy Drive
Hard/Floppy Drive Controller
101 Keys Enhanced Keyboard
Hi-Res (720x350) Amber Monochrome Monitor
Monochrome Graphics Card (Hercules Compatible)
Printer Port
Socket for 80287 Math Co-Processor
Battery Back-Up Clock and Calendar



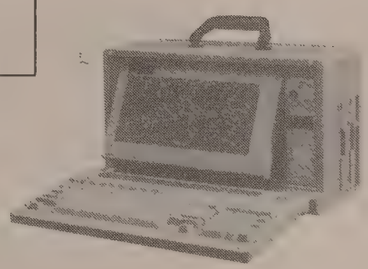


Authorized Dealer Of

LEADING EDGE®
AUTHORIZED RETAIL DEALER

KAYPRO®

OPTIMA



256K RAM
8 Expansion Slots
150 watts Power Supply (110/220V AC)
360KB Floppy Drive
Floppy Drive Controller
AT Style Keyboard
Hi-Res (720x350) Amber Monochrome Monitor
Monochrome Graphics Card (Hercules Compatible)
Printer Port
Socket for 8087 Math Co-Processor
Slide-In Case With Reset & Turbo Button & LED

ONE YEAR WARRANTY PARTS & LABOR

XT 8 MHz **$449**

XT 10 MHz **$499**

XT 12 MHz **$549**

***All Systems Below Include 20MB Hard Disk**

- LCD AT 386 Portable (1MB, S, P, G) . . **$2999**
- LCD AT Portable (640 KB, S, P, G). . . . **1999**
- LCD 10 MHz XT Portable (640 KB, S, P, G). **1499**

ONE YEAR WARRANTY PARTS & LABOR

Portable 386/AT/XT

*Price subject to change w/o notice

THE COMPUTER STORE

429 Castro St.
Mt. View, CA 94041
(415) 968-3466/7

Mon.-Fri.: 10-7
Sat: 11-5
FAX NO. **(415) 968-2618**

CALL FOR OTHER PRODUCTS NOT LISTED
DEALER INQUIRIES & CORPORATE P.O.'S WELCOME

5000 Geary Blvd.
(corner of 14th Ave.)
San Francisco, CA 94118
(415) 387-PCPC

Prices subject to change without notice

AS CLEAR AS BLACK AND WHITE

Every so often a product comes to market and clearly takes the lead. With more power, performance and speed; style and price unmatched by anyone else; total support and unique user features exceeding all others. As clear as black and white, DeltaGold is the new leader in personal computers.

DeltaGold offers features such as an easy front access Quick-Reference DOS guide and digital clock; complete and easy to understand documentation; a fully integrated software package for word processing, spread sheets, and database management; and an 18-month warranty and toll-free technical support hot-line. DeltaGold is the only company to provide a full tutorial on VHS cassette to teach you how to use the systems... It's clear DeltaGold is the leader.

So, when you or your company are ready to make your next PC purchase, look for the one that stands out. DeltaGold, the one to watch.

DELTAGOLD®

DELTA COMPUTER CORP.

Worldwide Computer Distributors

11511 Tennessee Ave.
West Los Angeles, CA 90064

213-479-3931
FAX: 213-473-6932

HSC Halted specialties co.

"Since 1963"

- Electronic Components & Test Equip
- Prototyping & Hobby Supplies
- Computers, Lasers & Optics

Turn your IBM PC/XT/AT or compatibles into a powerful Lab./Engineering I/O station . . .

PC-LabCard SERIES

Data Acquisition & Control
Lab Automation
Engineering Tool, Education

PCL-712 Multi-Lab (12 Bit) A/D + D/A + DIO + Counter

PCL-712 Multi-Lab is a low cost, single board solution for data acquisition and control, with all the following functions in one card:

- **Analog Input (A/D converter)**
  - 16 single-ended channels, 12 bit
  - Input range: +5V to −5V, 0 to 8.2V or 0 to +5V
- **Analog Output (D/A converter)**
  - 2 Channels, 12 bit
  - +5V ~ −5V/+8.2V ~ −8.2V, unipolar or bipolar
- **Digital I/O**
  - Input: 16 channels, TTL compatible
  - Output: 16 channels, TTL compatible
- **Counter**
  - 3 Channels of timer/counter

$295.00

PCL-748 IEEE-488 Interface Card

- Turn your IBM PC/XT/AT to a powerful, easy-to-use IEEE-488 controller
- Powerful, easy-to-use software command set. Few arguments and simple initialization
- All software driver is in on-board firmware. Reguires no additional disc software
- On-board RAM for working space. No system memory space is needed
- BASICA and BASIC compiler are supported as standard
- C and PASCAL language support packages available as options
- High data transfer speed

$395.00

PCL-714 Super-Lab (14 Bit) A/D + D/A + DIO + Counter

PCL-714 Super-Lab is a valuable single board solution to your data acquisition and control requirements.

- **Analog Input (A/D converter)**
  - 16 differential channels
  - 14 bit, 25,000 samples/sec
  - Input range: +5V to −5V, 0 to 8.2V or 0 to + 5V
- **Analog Output (D/A converter)**
  - D/A Channels: 1 standard, 1 optional
  - 14 bit, ±5V or ± 8.2V range
- **Digital I/O**
  - Input: 16 channels, TTL compatible
  - Output: 16 channels, TTL compatible
- **Counter**
  - 3 channels of timer/counter

$495.00

PCL-725 Relay Actuator and Isolated D/I Card

PCL-725 offers 8 programmable SPDT relays for ON/OFF control or small power switching, and 8 channel opto-isolated inputs which can be used as digital input under noisy environment or floating potential.

- **Relay Actuator Outputs**
  - 8 channels, SPDT form C
  - Contact rating: 1 Amp/120 V
- **Isolated Digital Inputs**
  - 8 channels, isolated or non-isolated jumper selectable.
  - Type of opto-isolator: 4N25

$240.00

PCL-750 Prototype Development Card

PCL-750 is an excellent alternative to pure breadboard card for prototype developing of PC add-on cards.

- Built-in basic circuit for a great deal of time saving
- Large breadboard area (3290 holes) for user circuits
- Independent memory and I/O address decoders included
- Address sizes of memory and I/O are jumper selectable
- All bus signals are buffered, marked and ready for use.

$74.00

PCL-720 Digital I/O and Counter Card

- **32 Digital Input Channels**
  - TTL compatible
  - Low loading: 0.2 mA at 0.4V
- **32 Digital Output Channels**
  - TTL compatible
  - Driving capacity: Sink 24 mA, Source 15 mA
- **Timer/Counter**
  - INTEL 8253 chip
  - Breadboard area for flexible user configuration

$160.00

ALSO AVAILABLE:

• Stepping Motor Control Card	$395	• Relay Output Board (16-CH)	$169
• RS-422 Interface Card	130	• PC-LABDAS Level 1	195
• OPTO-Isolated D/I Board (16-CH)	110	• PC-LABDAS Level 1 & 2	495
• Wiring Terminal Board	45	• UNKELSCOPE Level 1	125
• Quick Connect Wiring Module	125	• UNKELSCOPE Level 1& 2	549

3 CONVENIENT LOCATIONS:

HSC Electronic Supply of Santa Rosa
6819 S Santa Rosa Ave
Cotati, CA
(707) 792-2277

HSC Electronic Supply
5549 Hemlock St
Sacramento, CA
(916) 338-2545

3060 COPPER RD., SANTA CLARA, CA 95051

WE SHIP C.O.D.

MAIL ORDERS

Store Hours:
Mon-Fri 8 00-7 00
Saturday 9 00 5 00

Call NOW! (408)732-1573

AMERICAN EXPRESS · MasterCard · VISA

TERMS Minimum order $10 00 California residents add 7 ½% sales tax Prepaid orders sent freight C O D or call for charges shipping will be added to credit card and C O D orders Prepaid orders over $100 00 use money order or certified check Please do not send cash Some items limited to stock on hand Prices subject to change

A Different Kettle Of Fish: Sun's 386 Machine

By Bennett Falk

In April Sun Microsystems introduced the Sun 386i. Based on the Intel 80386 microprocessor running at 20 or 25 MHz, the 386i is the latest entry in the workstation sweepstakes, and it will undoubtedly raise eyebrows and lower bank balances before it vanishes over the horizon.

Pitfalls

The 386i represents a new phase in Sun's campaign to compete directly with the high-end personal computers (such as the Compaq 386, the IBM PS/2 Model 80, and the Macintosh II) that are invading the workstation market. (If the PC/workstation distinction is wasted on you, try to pick up a copy of Walter Zintz's workstation article "Can You Afford a Workstation Yet?" in *UNIX World* March, 1988.)

The first blows in this campaign were struck more than a year ago when Sun cut the price of its Motorola 68020-based 3/50 workstation to $5,000. This made the 3/50 affordable for a much wider audience, but it also revealed two pitfalls workstation manufacturers face in competing with high-end personal computers.

One pitfall is simply a distribution problem. For most of its corporate life, Sun has maintained its own sales force and relied relatively little on "value-added resellers" (VARs). With the price cut, the 3/50 was close to becoming a high volume item, but there was no dealer network in place capable of supporting large scale distribution to end users.

The other pitfall is simply that the 3/50 and its successor, the 3/60, could not provide DOS compatibility. DOS compatibility is just about a necessity in the business/technical workstation world. Computer manufacturers are discovering that success depends as much on a smooth "migration path" for entrenched DOS applications as on performance.

In its larger models, Sun managed DOS compatibility with board-level components based on Intel processors, but the 3/50 and 3/60 were single board computers with no way to accommodate PC/AT compatible cards.

While the reduced prices on Sun's 3/50 and 3/60 created a publicity stir and excellent bargains for Sun's existing clients, price cuts alone were not enough to bring the company into any new markets.

Something New

The 386i, however, is something else again. In the first place, Sun will market the machine through VARs as well as through its traditional sales force. While it's unlikely that the 386i will appear at your neighborhood computer store, the new computer will be much more "available" than its predecessors have been.

Copyright © 1988 by Bennett Falk. Bennett Falk lives in the Bay Area and works for Sybase, Inc. He writes whenever he can and hopes for the best.

Computer manufacturers are discovering that success depends as much on a smooth migration path for entrenched DOS applications as on performance.

Table 1: CPU Intensive Tests:

	(Compaq 386)	(Sun 386i)
	(All times in seconds)	
Sieve		
100 iterations, 1899 primes.		
Real	11.3	6.2
User	11.1	5.53
System	0.05	0.01
System Call Test		
Real	2.45	1.75
User	0.26	0.08
System	2.08	1.44
Loop Test		
Real	2.06	1.02
User	1.9	0.92
System	0.03	0
Function Call Overhead		
Function Call		
Real	0.35	0.19
User	0.2	0.1
System	0	0
Assignment		
Real	0.19	0.10
User	0	0
System	0	0
Overhead	0.16	0.09

The 386i is also a fascinating machine technically. It is emphatically *not* an AT clone. The machine is designed from the ground up as a UNIX machine, and in fact it is the first Intel-based computer to run a version of Berkeley UNIX. Other UNIX products for Intel-based machines have been derived from AT&T UNIX.

Specifications

There are two models of the 386i: the Model 150 featuring a 80386 CPU and 80387 co-processor running at 20 MHz, and a Model 250 with the same chips running at 25 MHz. The Model 150 is rated at 3.0 MIPS (millions of instructions per second) and the Model 250 at 5.0 MIPS.

Both models feature a single board computers in which CPU and coprocessor as well as controllers for Ethernet, Direct Memory Access, and peripherals are integrated on a single system board.

The Model 150 comes with 4MB RAM, the Model 250 with 8MB. Either model may be expanded to a maximum of 16MB RAM. The Model 250 feature a 32K memory cache. Both models use a 32 bit bus that operates at the native CPU speed. A slower, four-slot PC-AT compatible expansion bus is also included.

Either model is available in a diskless configuration for use with a file server. For standalone use, hard disks ranging in size from 91 MB to 327 MB are available. The machine is small enough to fit on a desktop, but is probably best placed out of the way on the floor nearby.

Standard equipment includes a 3.5" disk drive, a 107 key AT-compatible keyboard, and an optical mouse. Color and monochrome monitors of various sizes and resolutions are available.

SunOS release 4, which merges features of UNIX System V.3 and BSD 4.2/4.3, is bundled with the system, as is VP/ix, which provides DOS 3.3 capability. The visual presentation in the Sun windowing system is clean and easy to read.

These machines are not cheap. A diskless Model 150 with a small (12-15") monochrome monitor is priced at $7,990. A fully loaded 150 with hard disk and 19" color monitor is priced at $14,990. Prices for the Model 250 range from $13,990 to $19,990.

DOS Performance

The 386i provides access to DOS services and applications through VP/ix, a product of Phoenix Technologies that is bundled with the Sun Operating System. VP/ix allows users working on the 386i's bit-mapped console to run "any reasonable number" of DOS windows, each of which behaves like a PC, without interrupting regular UNIX operation. Many UNIX commands can also be executed from the DOS windows,

Table 2: Disk Intensive Tests

	(Compaq 386)	(Sun 386i)
Disk Write		
Real	0.44	0.53
User	0	0
System	0.28	0.38
Disk Read		
Real	0.44	0.59
User	0	0
System	0.26	0.19
Pipe Test		
Real	1.41	1.54
User	0	0
System	0.6	0.78

Hottest 386 Supersystem on the Market!*

EVEREX — System 386/20

COMPUTER SYSTEMS DIVISION

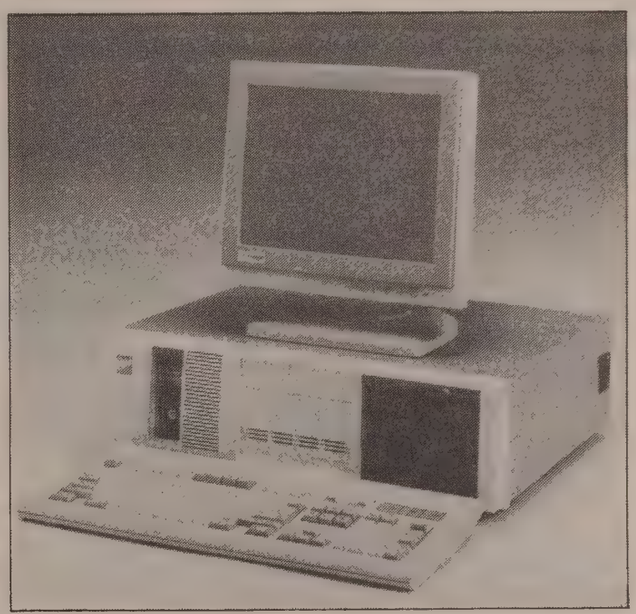
Brand-New from EVEREX COMPUTER SYSTEMS DIVISION

Establishing A New PC Performance Standard!

The Everex System 386/20 offers unexceeded performance in an 80386 based personal computer. Designed as a business or personal workstation, the Everex 386 delivers a high-performance environment for current-generation AT-compatible software while providing a platform for future operating systems, including OS/2, XENIX 386 and UNIX 386. Advanced features include Everex's Advanced Memory Management Architecture (AMMA) and a very fast 1:1 interleave hard disk controller. An eight digit real-time display continuously updates system and drive status.

Advanced Features:

- Can be factory configured with up to 8 megabytes (1 MB is standard) of dynamic RAM and a write-back cache of very high speed 25ns static RAM.
- Offers 8 expansion slots. Six 16-bit slots and two 8-bit slots.
- One of the 8-bit slots has also been designed to double as a 32-bit memory expansion slot.
- 20 MHz Intel 80386 microprocessor.
- Zero wait-state operation.
- Advanced Memory Management Architecture™ with large "write-back" RAM cache.
- High performance 1:1 interleave hard disk controller.
- Real-time alpha-numeric status display.
- Front access to 5 mass storage devices.
- One-year on-site maintenance contract included.



Check Out These Benchmark Comparisons:

SYSTEM	MIPS	LAND MARK	NORTON 3.1	NORTON (ADV)
EVEREX 386-20/0	**2.90**	**35.00**	**23.00**	**24.30**
COMPAQ 386/20	2.89	34.50	18.70	24.20
WYSE 386-16	2.11	20.60	15.30	17.60
ACER 386-16	2.08	20.60	10.30	16.20
COMPAQ 386-16	2.03	20.00	15.30	17.60
IBM MODEL 80	2.01	20.00	15.30	17.60
COMPAQ 286-12	1.41	11.70	10.30	11.50
AST PREMIUM 286-10	1.40	13.00	11.50	11.10
IBM MODEL 50/60-10	1.20	9.80	8.40	9.80
IBM AT 286-8	1.02	8.00	N/A	7.70

Available **Only** From Authorized EVEREX Computer Systems Division Dealers.

COMPUTER SYSTEMS DIVISION

*"An incredible powerhouse, it blew away everything, including COMPAQ's new 20MHz, on all the tests. It's well-built and we just can't say enough good things about it. If raw power is what you want, this is the first machine to consider . . . performance was unbelievable . . . this is one heck of a computer and the one (we) most wanted to keep."
Computer Currents, March 8, 1988

"The absolute fastest I've seen is the Everex 386 - the one to watch . . . It's slick and state-of-the-art . . . The machine clocks out faster than any 20-MHz 386 I've seen thus far . . . Hot stuff."
John C. Dvorak, *PC Magazine,* April 12, 1988

Micro Strategies is Your #1 Source for:

- Full Line of Everex Peripheral Products including 386/20, 386/16, 286/16 and 286/12
- Local Area Networks
- Business Leasing
- Superior After-Sale Support and Service
- Specialized Consulting & Training

Made in the USA

Everex Computer System Computers are designed and manufactured in the US to provide superior performance and reliability. All Everex systems are completely burned-in and factory-tested before shipment.

MICRO STRATEGIES, INC.

23 Years in the Industry

Authorized Everex Computer Systems Dealer

1050 Marina Village Parkway
Suite 102
Alameda, CA 94501
(415) 865-6880

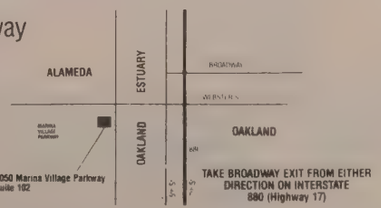


Table 3: Multi-User Tests

	(Compaq 386)	(Sun 386i)
Shell (one user)		
Real	2.2	2.42
User	0.07	0.16
System	0.68	0.95
Shell (two users)		
Real	2.12	4.67
User	0.13	0.35
System	1.23	2.07
Shell (three users)		
Real	3.34	6.36
User	0.17	0.57
System	1.83	3.05
Shell (four users)		
Real	4.34	8.24
User	0.3	0.79
System	2.4	4.09
Shell (five users)		
Real	5.04	10.45
User	0.37	1.05
System	3.01	5.08
Shell (six users)		
Real	5.93	12.93
User	0.45	1.23
System	3.57	6.17

and files may be shared between the two operating systems. The DOS windows support monochrome, Hercules, and CGA display modes (EGA adapters could be added using the AT compatible expansion slots).

The Norton "System Information: Utility" gives the 386i's "PC in window" a healthy 27.5 rating. In spite of its obvious power, I/O in DOS windows seems sluggish. No DOS access is provided for users working on character terminals attached to the system.

A Modest Benchmark

For a first look at the 386i's performance, a suite of UNIX benchmarks (first published in an article by David F. Hinnant in the August 1984 issue of *BYTE*) was run on a 386i model 250 (80386 at 25 MHz, 80287 co-processor also at 25MHz) with 8MB of memory.

The results of these tests appear in Tables 1 – 4, along with the results obtained last fall from running the same tests on a Compaq 386 (16 MHz 80386, 2MB Memory, and 8 MHz 80287 co-processor) running SCO's XENIX. (See "How Fast Is It?", *MicroTimes*, October 1987. The source code for the tests adapted from Hinnant's article appeared in the *MicroTimes* article.)

On each computer, the test suite was run ten times. The figures in Tables 1 – 4 are averages for each test over ten repetitions. The figures labelled "Real" represent clock time or elapsed time for each test; "User" and "System" time are measurements of the time spent by the CPU running user instructions and privileged system calls respectively. The total CPU time is the sum of "User" time and "System" time.

Several things are worth noting about these this benchmarks. Above all, because so many variables affect computer performance, care should be exercised in drawing conclusions from these numbers. No attempt was made to "tune" either of the machines tested. The configurations used were "off the shelf" configurations.

In each case the user running the tests was the only user logged in to the systems tested. However, the 386i was more heavily loaded: it was attached to a network, and daemons to manage network processes were running.

In any benchmark, it is tempting to concentrate on elapsed time; clock time is, after all, the amount of time the user must wait between commands. However, the difference in system load between the two computers may make this a misleading comparison. A comparison of CPU times is a good indicator of machine performance more or less independent of system load.

The 386i is not an AT clone. It was designed from the ground up as a UNIX machine, and in fact is the first Intel-based computer to run a version of Berkeley UNIX.

To see the 386i at its best, look at its times for the CPU intensive benchmarks: the "Sieve," "System Call," and "Loop" tests. Given a CPU intensive task, the machine lives up to its processor's specifications.

The power of the CPU, however, is not reflected in overall system throughput. In any of the tests involving disk activity, ("Disk Read," "Disk Write," "Pipes," and the various "Shell" tests), the 386i performs at about the level of the Compaq, and for the mundane mix of jobs in the "Shell" test the 386i seems to be at a disadvantage, posting substantially higher times for both elapsed time and CPU usage.

Now, what do these benchmark results mean? Why should a computer that can crunch numbers at half the speed of light bog down running the ordinary jobs that are the Hapless User's lot? The technical reasons for this anomaly are not at all obvious.

It's tempting to use the distinction between personal computers and workstations to "explain" the relative performance characteristics of the Compaq 386 and Sun's 386i: workstations, this argument maintains, are specialized computers designed to perform computation-intensive tasks, it's hardly surprising that they offer less than optimal performance running shell scripts. But this begs the question. Why shouldn't a more powerful computer (which the 386i seems to be) perform better across the board? □

Table 4: Compiling the Test Programs

	(Compaq 386)	(Sun 386i)
Compiling dwrite.c		
Real	7.62	4.96
User	1.24	1.33
System	2.25	1.98
Compiling dread.c		
Real	3.3	5.19
User	1.29	1.44
System	1.17	1.94
Compiling fcalle.c		
Real	2.67	4.32
User	0.7	0.93
System	1.14	1.81
Compiling fcalla.c		
Real	2.54	4.35
User	0.68	0.91
System	1.08	1.82
Compiling loop.c		
Real	2.73	4.73
User	0.75	1.18
System	1.1	1.86
Compiling pipes.c		
Real	3.01	5.21
User	1.11	1.34
System	1.11	1.98
Compiling scall.c		
Real	2.63	4.55
User	0.67	0.89
System	1.07	1.84
Compiling sieve.c		
Real	3.1	4.62
User	1.18	1.32
System	1.09	1.93

FUJITSU

DX 2300/2400 and DL 3300/3400

DX 2300/2400
- 324 cps draft - 54 cps NLQ
- 80 column or 136 column
- Epson FX-80, IBM ProPrinter and IBM Graphics emulation
- Friction feed and adjustable tractor feed
- Quiet (less than 55dBA)
- Parallel and serial (optional) interface
- Color option available
- MTBF - 6000 power-on hours

Call for Price

DL 3300/3400
- 24-wire dot matrix
- 240 cps draft - 60 cps letter quality
- MTBF-8000 power-on hours
- IBM ProPrinter, IBM Graphics, Diablo 630 & Epson JX-80 emulation
- Parallel and serial (optional) interface
- Narrow or wide carriage
- Adjustable tractor and friction feed
- Head life 300 million strokes per wire

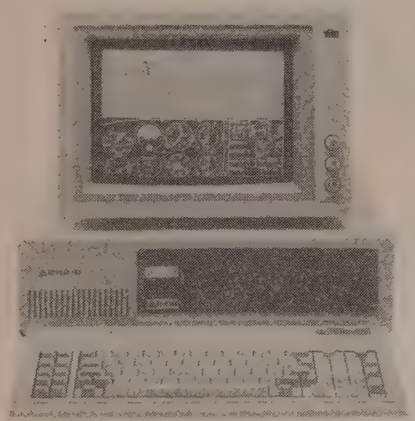
Call for Price

Cypress Distributing Company®

560 Lincoln Avenue, San Jose, CA 95126, (408) 297-9800
22186 Rim Pointe, El Torro, CA 92630, (714) 770-7244
2670 Truxel Road, Sacramento, CA 95833, (916) 646-1955

Quimax Emerson Century Data Systems Packard Bell Personal Computer Products Panasonic Seikosha C. Itoh Moniterm Star Micronics Mitsubishi Rutishauser Canon

TOP VALUE
FROM TOPTEK



Runs Twice As Fast As IBM XT And Runs CP/M

IBM PC XT Compatible

Includes: 8 MHz (10 MHz optional) • Turbo Motherboard • 150W Power Supply • Floppy Disk Drive • Monochrome Graphic Card w/Port • Keyboard • Monitor

Only $499 Orig. $799

10 MHZ AT SYSTEM

Includes: 10 MHz Turbo Motherboard • 200W Power Supply • HDC/FDC • Keyboard • 1.2 Mb Drive • FCC Approved • Monitor

Only $849 Orig. $1599

386 Also Available

PRINTERS & SUPPLIES

HP Laser Series II	$1625
Epson LX 800	199
Epson FX 86E	329
Epson FX 286E	459
Epson EX 1000	525
Epson LQ 800	449
Citizen 180D	185
Citizen MSP-10	285
Citizen MSP-15	349
Cables	7^{95}
Printer Stands	8^{95}
All printer ribbons available	Call

CARDS & BOARDS

640K Motherboard	$85
Turbo Motherboard 10MHz	89
AT Motherboard	269
Color Graphic Card	45
Mono Graphic Card w/Printer Port	55
EGA Card (Autoswitch)	129
Disk I/O Card	62

MISCELLANEOUS

200W Power Supply	75
150W Power Supply	55
Surge Protector	9^{50}
UPS (Uninteruptable Power Supply)	225
Tape Back Up	Call
EGA Monitor	349
Mono Monitor	85

SPECIAL

Star NX 1000 only $185 List $350

NEC P2200 (24 pin) only $354 List $599

Logitech C7 Mouse Only $67 List $99

MODEMS

Avatex 1200 Baud External	95
Everex 1200 Baud Modem (Int.)	89
Everex 2400 Baud Modem (Int.)	199
2400 Baud External Modem	215

HARD DISKS & CHIPS

4164	Call
41256	for
8087	the
80287	best
Seagate 4038/251	prices!

1200B Internal Modem Hayes Compatible
Only $59.95
List $129

2400B Internal Modem Hayes Compatible
Only $135
List $250

REPAIR & UPGRADES

Fastest Turnaround
Lowest Rates
AT&T, IBM, & All Name Brand Products

SEMINARS

How To Build Your Own PC
Learn DOS Operation & Basic Troubleshooting Skills
$25 per person
Saturday at 10:00 AM

1520 Taraval St.
(between 25th & 26th)
San Francisco, CA 94116
Telex: 379-9197

TOPTEK
MICRO CENTER INC.
(415) 564-3500

Office Hours
Mon-Fri: 10-7
Sat: 10-5

ON SITE SERVICE & PROFESSIONAL CONSULTING AVAILABLE • DEALER INQUIRIES WELCOME

IBM is a registered trademark of International Business Machines, Inc.

Price subject to change without notice.

The FBI Comes Rapping, Rapping At Your BBS

By Brock N. Meeks

If that new user on your local bulletin board system (BBS) seems to be asking a few too many personal questions, you might want to reconsider answering. Unless of course, you don't mind your answers being stored in a database maintained by the Federal Bureau of Investigation (FBI).

That new user just might be a member of a special FBI task force scouring the nation's electronic landscape. Or so contends Glen L. Roberts, director of The FBI Project, which publishes *The FBI And Your BBS* and a privacy/surveillance newsletter called *Full Disclosure*.

You're shaking your head; OK, so I was a bit leery of him, too. After all, the FBI is such an easy target. Then I started rummaging through an old, coffee cup-ringed file labeled only "FBI/Computer Squad." In there I found several old clippings and other documentation that started to back up Roberts' statements.

If You Dig, You Hit Dirt

In 1984 a short series of discreet advertisements, placed by the FBI, appeared in a few computer trade publications and in *The Wall Street Journal*. The message was simple, and went something like: "We're looking for computer literate persons to join the Bureau." There was no mention of any special task force; however, it was clear that the Bureau wanted to upgrade its high-tech prowess.

Although the FBI won't confirm the existence of a computerized "hit squad," a public relations officer from the Bureau did confirm that they "have made an extraordinary effort to recruit more technically oriented personnel" since 1984.

If you dig hard enough, you'll find substantial evidence that the FBI is most definitely working overtime in its efforts to monitor the electronic community. "They are desperately wary of the way information flows so freely in this medium," says Roberts.

There was a number scrawled on the inside flap of that dogeared folder. It was annotated "Former agent; possible source." I called the number, and got a story.

"I was recruited in 1983 by the FBI for my computer skills," the former agent told me. Because he still does some consulting for the Bureau, he asked not to be identified, but he laid out a very specific plan by the FBI to increase its knowledge of the electronic communications world. He confided, "If the Bureau is monitoring BBSes, it's a small group." Much more likely, he offered, the FBI is drawing on the expertise of a small band of high-tech freelance snoops to augment their staff, until their own skills are honed.

Copyright © 1988 by Brock N. Meeks. All rights reserved. *Brock Meeks is a San Diego-based columnist. His favorite radical BBS is...well...private.*

If you dig hard enough, you'll find substantial evidence that the FBI is working overtime in its efforts to monitor the electronic community. "They are desperately wary of the way information flows so freely in this medium," says Glen L. Roberts, director of The FBI Project.

Tradition

Certainly the FBI has a tradition of "investigating" groups of people it deems "unsavory" or threatening. Recent published reports told of how the FBI has gathered files on several pro-Sandanista groups here in the U.S. This type of information gathering process seems to be standard operating procedure for them.

In Roberts' *The FBI And Your BBS*, a brief history of the FBI's willingness to gather all known information on a target group is outlined.

Pulling from the Final Report of the Select (Senate) Committee to Study Governmental Operations with respect to Intelligence Activities, Book IV, Supplementary Reports on Intelligence Activities, Roberts includes this excerpt:

"Detectives were sent to local radical publishing houses to take their books. In addition, they were to find every private collection or library in the possession of any radical, and to make the arrangements for obtaining them in their entirety. Thus, when the GID (General Intelligence Division) discovered an obscure Italian-born philosopher who had a unique collection of books on the theory of anarchism, his lodgings were raided by the Bureau and his valuable collection become one more involuntary contribution to the huge and ever-growing library of the GID. [pages 87 – 88]."

Change "any radical" to "any BBS" and "book" to "disk," and quite suddenly the electronic landscape turns into a winter still-life.

Data Collection

Roberts, quoting from his report, says, "Unlike other communications media, information on a BBS does not get read by anyone before its instantaneous publication. Therefore, the FBI has much less of a possibility of intimidating the owner of a BBS into *not* publishing certain information. The FBI also acts as if BBSes have a monopoly on the distribution of so-called 'illegal information.' The FBI often uses this 'danger' as justification to monitor the activities on these systems. In reality, however, BBSes transfer much less 'illegal information' than the phone system."

Roberts' statements are worth noting in light of the government's increased interest in the marriage of criminal activity and electronic communications.

A 455-page report issued by the President's Commission on Organized Crime, dealing with drug abuse and trafficking, cites the fact that crime has moved into the high-tech arena. The report states "To the extent that law enforcement agencies' capabilities and equipment are inferior to those of drug traffickers, immediate steps should be taken to rectify the situation." The report then recommends that data-gathering efforts of several agencies (including the FBI) should be tied together in one "all-source intelligence and operations center."

The spirit of that document is being embraced by the long-distance phone companies. Tired of the multi-million dollar losses due to stolen or illegally acquired access codes, these companies are circling the wagons in a spirit of high-tech cooperative surveillance.

Quoting from a *Washington Post* article, here's what Robert Fox, US Sprint's director of security, says: "To shut down theft, the companies use each other's security services and the help of local law enforcement officials, the Secret Service and the Federal Bureau of Investigation. Your major toll carriers may be competitors, but in this one instance we share information and resources. We do everything from technical to on-street surveillance."

Evidence that the FBI is actively monitoring BBSs also came to light in the case of a Denver

ADULTS

Purchasers of the following adult programs must be over 21 years old and sign the order form.

AD#1A—ADULT GAMES 1: Fifi, Softporn, Softporn II, MadLibs, B-Ware
AD#1B—ADULT GAMES 2: AstroTit, Bad-Bad
AD#1C—ADULT GAMES 3: Nasty, Adult, XRated, SexGame, Party Sex
AD#2D—HARDCORE SLIDE SHOW: Sit back and enjoy.
AD#2E—XXX & PINUPS: Hot Honeys digitized pics.
AD#2F—ANIMATED PORNO: German made porn. 4 scenarios.
AD#2G—ADULT GRAPHICS: Andromeda, Couple, Butterfly Position, Bride, Orgy.
AD#2H—EROTICA: Animated Graphics at its best. CGA req'd.

BUSINESS

B#6—PC-ACCOUNTING PRO: Integrated GL/AR/AP/PR/INV Small business single entry system like Dome.
B#3—EZ-FORMS VC24: Fill-in business forms to edit and save. Forms can be numbered, character drawing in edit mode.
B#21—BUSINESS LETTERS (2 DISK SET)**:** 650 fill-in business letters can be edited with standard text editor. (Archived)
OR#16—ZIP-PHONE (2 DISK SET)**:** Area code/zip code utility.
B#15—PROJECT MANAGEMENT: Interactive programs using critical path method handles all systems internally, allows modification of system.
B#11—FLOWCHARTER: User-friendly flowcharting program. Has several dozen stock symbols to draw from.
B#73—BIDS-N-QUOTES: Maintains database of bid items together with Labor, Equipment, Material and Sub-Contractor costs.

CAD

CAD#2—DANCAD3D v2.0 (2 DISK SET)**:** Advanced 3D/2D Drafting wire-frame animation program. Auto-dimensioning, pencil tests, hi-res printouts for photography. Supports Mono, CGA, VGA and EGA, Mouse or FastTrap 3D Trackball, & 127 Plotter pen colors. (H.D. REQ'D.)
CAD#14—DANMOVE (2 DISK SET)**:** Works with DANCAD3D to create animated presentation of screens saved as pixel bit maps.
CAD#4—PC-KEYDRAW v3.31 (2 DISK SET)**:** Easy, Powerful CAD program for CGA and EGA, designed for mechanical engineers, artists, graphic designers, architects and electrical engineers. Mouse OK.

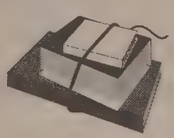
COMPUTER LEARNING

CL#3—BASIC TUTOR: Excellent interactive tutorial written in basic. Covers all aspects of basic programming.
CL#5—P.D. TUTOR: How to run Public Domain, ShareWare, User-Supported a must for new users.
CL#11—DOS DYNABOOK (2 DISK SET)**:** DOS Tutor and trouble shooting programs.

DATABASES

DBS#5—AS EASY AS v3.0: Lotus clone. 1024 column spreadsheet. Graphing. Reads Lotus Files.
DBS#7—WAMPUM v3.1B (2 DISK SET)**:** Fantastic dBASEIII Clone. (HARD DISK REQUIRED)

EDUCATION



ED#3C—AMY'S FIRST PRIMER: 6 wonderful Kindergarten programs include arithmetic, spelling, color and shape recognition. CGA req'd.
ED#3D—KID'S BANKBOOK: Keep track of allowances and learn basic finance.
ED#3E—AMANDA'S LETTER LOTTO: Alphabet game for 18 months & up. CGA req'd.
ED#3F—PRESCHOOL ED: Add, Subtract, Divide, Multiply, Kid's giant letter Word Processor, Funnels & Buckets Math Arcade Game.
ED#3H—WHIZQUIZ: Randomly generated, graded problems on elementary math (including fractions, decimals, percents and reciprocals) 10 levels of questions are geared to the childs age. CGA req'd.
ED#3I—KID'S FUN: HANGMAN word game with expandable dictionary. MOSAICS lets kids move colored pieces around to create pictures.
ED#4—GEOGRAPHY I: WorldMap, Geochron, States & Capital games. CGA req'd.
ED#23—FLAGS: Flags of the nations displayed on screen. 115 flags in all. CGA req'd.
CL#12—JEM LOGO: Teaches children the basics of computer programming.
ED#1—EQUATIONS & LOGIC: Math/Science formulas + truth tables.
ED#2—IQ: Programs with tests to improve your IQ similar to questions on SAT test (good practice).
ED#4B—GEOGRAPHY II: World-3D, World Weather Data. CGA.
ED#4C—THE WORLD DIGITALIZED (3 DISK SET)**:** Over 100,000 points of long/lat detailed maps. CGA.
ED#12—FLASH CARDS: High school level vocabulary drills.
ED#14A—TEEN ED #1: Higher, Math, Trig, Geometry, Biology, Circuitry, PI Morse Code.
ED#14B—TEEN ED #2: Algebra, chemistry, history, spelling bee, math, astronomy, plus San Mateo Education Set.
ED#14C—TEEN ED #3: VIDEO-CHEM Game teaches chemical valances.
ED#16—TIME TRAVEL HISTORY: American History Adventure Quiz Game, PLUS the U. S. Constitution.
ED#18—TYPING TUTORS: LetterFall & PC-Touch teach typing and speed. Will work on Mono.
ED#19—PC-FASTYPE: Typing tutor for beginners or to build speed. CGA req'd.
ED#20—ALGEBRA: Does computations in integers and reals.
ED#22—PRE CALCULUS TUTOR: Trig/Algebra vital to Calc 1 & Business Calc.

SOFTWAREHOUSE

3080 Olcott Drive Suite 125A
Santa Clara, CA 95054

408 748-0461

5.25" Format
$3.50 per disk
$3.00 per disk for ten or more

EDUCATION (cont.)

ED#24—PHYSICS: High school level physics.
ED#26—DNA & ELEMENTS: Graphic DNA analysis/Element chart.

EGA PROGRAMS

EG#1A—GAMES I: EGA-Risk like risk board game, EGA-Asteroids, EGA-Breakout, EGA-Fractals.
EG#1B—GAMES II: Mahjong Chinese gambling game, EGA Stock Market, Triskelion ring puzzle game.
EG#1C—GAMES III: Scrabble, Checkers, Aldo.
EG#2—EGA ASTRONOMY/BIORYTHM: Astronomy Routines paint of night skies & Biorythm.
EG#3A—EGA DEMOS #1: SCREEN DAZZLE!!!
EG#3B—EGA DEMOS #2: Show off your set's graphic capabilities Kaleidoscope & slide show.
EG#3C—EGA DEMOS #3: Rolex, Mona Lisa, Rax 4000 color demo, Coseye.
EG#6—IMAGE 3-D: 3-D wire frame modeling program for EGA.

ENHANCED TEXT

ET#2—FONTASTIC (2 DISK SET)**:** Use a variety of fonts within your word-processing documents. Fantastic!
ET#4—LQ: Gives near letter quality print capability to dot matrix.

FOREIGN LANGUAGE

FL#2—FRENCH (2 DISK SET)**:** tutor: vocabulary, phrases translation, verbs, etc. beginning and advanced.
FL#2C—FRENCH HANGMAN: French to English and vice versa. fun and educational.
FL#3—SPANISH (2 DISK SET)**:** beginning and advanced Spanish vocabulary, phrases, etc.
FL#3C—SPANISH VERB CONJUGATOR: Excellent tool gives instant conjugations.
FL#2C—SPANISH HANGMAN: Spanish to English and vice versa.
FL#8—HEBREW QUIZ: 350K Hebrew language tutor reaches alphabet, vocabulary, verbs and grammar.

COLOR GAMES

C#1—ARCADE GAMES: Crossfire, Space Gugs, Pac-Girl, Life, Space Invaders, Asteriod, Pac-Man, Fortune, Frogger.
C#4—ARCADE GAMES: Starship, Sci-Fly, Sopwith Camel, Killer Bees, Tank, Ninja.
C#9—CASINO GAMES: Slots, Baccarat, Solitaire, Blackjack, Acey-Deucy, Poker Plus Blackjack Strategy Tutor.
C#13—DIGITAL BASEBALL LEAGUE: realistic simulation game based on actual lifetime statistics of major league players! Good color graphics! Entertaining simulation play.

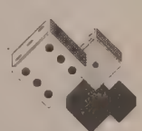
GRAPHICS

GR#14—"PRINTSHOP" GRAPHICS: three additional libraries of graphics. Must have Printshop™ to run over two hundred additional pictures!
GR#14B—"PRINTMASTER" GRAPHICS: 3 additional libraries of graphics Must have Printmaster™ to run.
GR#21—LIGHTING PRESS: PRINTMASTER™ clone! Make signs, greeting cards, letterhead stationary, all with fonts and graphics!

LOTUS

L#3A—LOTUS TUTOR #1: Beginning tutor must use Lotus.
L#3B—LOTUS TUTOR #2: Advanced tutor; uses Lotus.

MONO / COLOR GAMES



MC#1—MONO ARCADE GAMES: Bugs!, Pitfall, Pac-Man, Starship, Haunted Mission.
MC#2—SPORTS & CASINO: Fortune, Craps, Blackjack, PC-Golf, Monopoly, Armchair QB.
MC#9—GAMES ASSORTMENT: Lotto 6/49, PV-Lotto, Duplicate Bridge Tournament, News, Snake, Crazy 8's, Dominoes, Football, Crossword Puzzle Generator, JigSaw Puzzle.
MC#30—TURBO-BRIDGE: Play 1 or all 4 hands as you learn strategy, or let your PC play all hands, and observe.

ORGANIZATION

OR#1—HOMEWARE v3.2 (2 DISK SET)**:** Home inventory, VCR library, Shopping list, Mixed Drinks, Auto maintenance, Name & Address book, Hobby records, & Meal planner.
OR#4—DESKTEAMS: Desktop Manager with communications. Sidekick clone.
OR#7—PC-RECIPE: Build your recipe library with this nifty program. Comes with 100 pizza recipes & Mrs. Fields cookie recipe.

UTILITIES

Virus Got You Down?

UT #20—Security: Bombsquad, Chk4Bomb, Password protections, encryption, plus more. 10 Utilities plus Trojan Horse
UT#1—MAGEE AUTOMENU v4.0: GREAT! COLORFUL! Easy to set up hard disk menuing system.
UT#31—POINT & SHOOT: Program execution and file management, including up to 30 menu entries with 10 sub-menus per menu, calculator, disk stats, help screens, colors and hourly chime.
UT#21—LASER UTILITIES: Graphics/text printing, printer utilities, fonts, program controls, set-up, convert PC-Paint files
UT#27—LASER SOFTFONTS (2 DISK SETS)**:** Old English, Script, Helvetica, Bold, Italic, Dingbats, Computer keyboard symbols, PI, Tiny, Large, Hollow, more!
UT#26—DISKETTE LABELS: Labels for 3.5", 5.25", DiskCover.

RELIGION

R#11—KING JAMES BIBLE (7 DISK SET)**:** New & Old TESTAMENT (Archived) with utility included.
R#3—WORDWORKER (2 DISK SET)**:** New testament cross reference & search program.
R#4—BIBLE-Q: Trivia-type quiz with 1000 multi-choice questions.
R#10—BIBLEQUIZ PLUS: 3-level trivia game for 1-6 players.

SPECIAL INTERESTS

SI#3—ASTRONOMY: Star & Planet mapper/Comet tracking.
SI#3B—ACE (2 DISK SET)**:** PC Guide to the night sky. Great!
SI#4—ASTROLOGY/BIORYTHM: 2 programs to get your life together.
SI#6—FAMILY TIES v1.15: Another great genealogy program with Mormon option mode.
SI#39—CAMBRIDGE THOROUGHBRED HANDICAPPER: Figure odds on the ponies.
SI#41—CAMBRIDGE GREYHOUND HANDICAPPER: Figure odds on dog races.
SI#48—LOTTOPRO: Improve your odds. Store past history data, generate statistics tables, total.
SI#49—GOLF FOURSOME: Create, Handicap, change, monitor your foursomes.
SI#44—GIFTS & GIFTWRAP: 2 programs. GIFTS helps you with gift ideas for others. GIFTWRAP creates wrapping.

STOCKS

S#2—SAGE TRADER: Short term, high profit analysis program.
S#5—PC-STOCK: Graphic general purpose stock trend analysis. CGA req'd.
S#9—U-VESTOR: Investment tracker, net-worth statements, amortized loan tables, internal rate of return.

TECHNICAL APPLICATIONS

TA#8—SCI-CALC: Math & statistics calculations program performs 250 functions.
TA#18—SURVEYSOFT: Surveying for civil engineers/surveyors.
TA#11—PILOT MASTER: Helps private pilots file flight plans.

WORD PROCESSING

WP#1—PC-WRITE v2.71 (2 DISK SET)**:** VERY POWERFUL! Fonts/Math and foreign char., & much more. Supports Laser.
WP#13—GALAXY v2.3: Easy to learn, logical word processing with column oriented blocks, justification, headers, footers, zoom windows for split screen and much more. This new Version supports all graphics cards, & EGA in 43 Line mode
WP#3—PC-STYLE: Writing style analyzer.
WP#18—ESL WRITER (2 DISK SET)**:** W/P with 4 help programs especially designed for the writing students. Handles commands, punctuation, grammar and revision. Also contains several programs that help students develop their writing ability, plus 1258 topics in 21 categories that are suitable for different types of composition.

Please circle or refer to disk # when ordering.
Partial list - Over 600 titles
Call for our latest catalogue.
Hours: M-F 9 am - 6 pm

Total # of Disks _____

Cost per disk _____

CA Res Sales Tax _____

Ship / Handling **$2.00**

Total Enclosed _____

Ship To _____

_____

_____

Signature (over 21)

_____

talk show host assassinated by a neo-Nazi, white supremacy group.

Robert Miles, a defendant in the case, was a known computer buff. The FBI knew he also communicated with other groups of neo-Nazis via his modem. In order to further investigate the case (playing on a conspiracy hunch), the FBI bugged Miles' home by placing a bug *inside his modem*. Why? Every call Miles made via modem was recorded; the FBI had an instant, electronically generated map of the nationwide neo-Nazi BBS network.

Any Problem Here?

There are no laws prohibiting the FBI (or other agencies) from monitoring the public message traffic on a BBS; the Electronic Communications Privacy Act of 1986 protects private messages and privately stored files only. But what about an FBI agent monitoring a BBS solely for the purpose of gathering information on the board's users? Any problem here?

The former FBI agent I spoke with raised the concern that such casual monitoring might be a violation of the 1968 Wiretap Act. "In order to use a wire tap, you have to get a court order. Now if an FBI agent is monitoring a BBS to gather information, that becomes an interesting question, because there are very specific federal rules about a wire tap. My question to you about a BBS [being monitored] is: 'At what point does monitoring turn into a wiretap-like act?'"

Good point. The reality, however, is that there are no rules. Unless that agent is asking for private message traffic, he can, with impunity, monitor, store, and otherwise manipulate your public messages as he sees fit.

Although the FBI won't confirm the existence of a computerized "hit squad," a public relations officer from the Bureau did confirm that they "have made an extraordinary effort to recruit more technically oriented personnel" since 1984.

Roberts points out that a BBS with public access is fair game for any kind of governmental snooping. But there is a way to make such casual snooping by a federal agent a crime.

"If you want your BBS readily accessible to the public but want to protect against unwarranted monitoring, you have to provide a warning to prospective users," says Roberts. "It should read: 'This BBS is a private system. Only private citizens who are not involved in government or law enforcement activities are authorized to use it. The users are not authorized to divulge any information gained from this system to any government or law enforcement agency or employee.'"

This does two things. It makes the entire board "private." Second, it makes any kind of monitoring by the FBI (or other agencies, such as the Secret Service) a criminal offense (because they are would be guilty of unauthorized access; it also forces them to use the established guidelines of gaining information via a court ordered search warrant. The warning also protects you in another way: it stops "freelancers" from doing the Bureau's work.

Get Real

How real is the possibility of the FBI monitoring your BBS? *Slim*. Unless, of course, you happen to run a board dedicated to say, the Sanctuary Movement, or one that supports the Sandanistas or...any topic perceived to be of a questionable nature by the FBI.

The stories provided here bear out the existence of at least the FBI's increased interest in the potential of monitoring electronic messaging systems. How extensive is the FBI's actual fact gathering by monitoring BBSs? No one really knows. However, given the history of the Bureau, and the hard facts that crime in the information age makes full use of all the technology it can get its hands on, it's a small leap to believe that at least specific monitoring of certain target groups is taking place. (Given the manpower shortage of the Bureau, and its overwhelming case load, I would find it hard to argue for large-scale indiscriminate monitoring.)

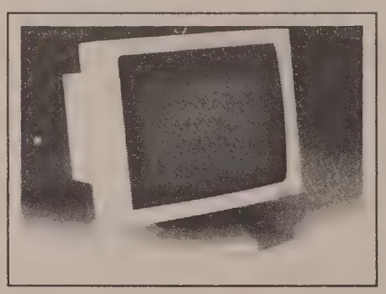
Where does that leave you and me in all this? Back at square one, watching carefully what we say online. If you're a member of a "controversial" BBS, you might pass the concerns of Roberts on to your sysop. If you are a sysop, you might want to consider adding a bit of protection to the board...for the rest of us. □

MONITERM

The Technological Leader in Monochrome and Color Display Systems

NEW VIKING 2400 (24") MONOCHROME MONITOR

Big Screens for PCs and Macintoshes

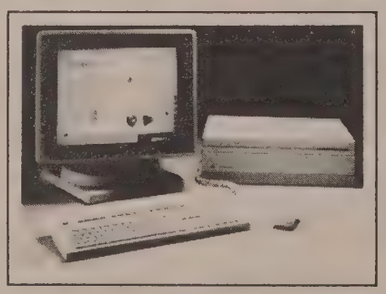


Viking 1

▶ **Viking 1 - Desktop Publishing**

The 19" Viking 1 monitor, for the IBM PC, XT, AT, PS-2, compatibles and Apple Macintosh SE and II, turns your computer into a powerful Desktop Workstation with a full two pages of text, high resolution graphics, and CAD drawings displayed on one screen. A true "What You See Is What You Get" (WYSIWYG) format allows you to review and edit your working document on the screen, ***before*** you print. The graphics controller allows you to execute functions exceedingly fast, for increased productivity. A system that improves every aspect of monitor performance, and provides cost-justifying benefits, over and over again.

"IBM," "PC," "AT" and "XT" are registered trademarks of International Business Machines, Inc.



Viking 10

▶ **Viking 10 - High Resolution CAD/CAM**

The Viking 10 color monitor, for IBM PC, XT, AT compatibles and Apple Macintosh II is a vital productivity tool for the new generation of personal workstation users. A 1024x768 display format, refreshed at 60 Hz (flicker-free), produces large screen, life-like images on a 19" light-weight monitor. Using the Hitachi ACRTC chip on the Viking controller board provides high speed graphics control. Efficient character mode operations and sophisticated graphics functions are combined in the same program.

Apple, Macintosh SE, Macintosh II are trademarks of Apple Computer, Inc.

Cypress Distributing Company

560 Lincoln Avenue
San Jose, CA 95126
(408) 297-9800

22186 Rim Pointe
El Toro, CA 92630
(714) 770-7244

2670 Truxel Road
Sacramento, CA 95833
(916) 646-1955

Quimax Emerson Century Data Systems
Packard Bell Personal Computer Products
Panasonic Seikosha C. Itoh Fujitsu Star Micronics
Mitsubishi Rutishauser Canon

10 MHz XT

10 / 4.77 MHz Turbo Motherboad
256K RAM Expandable To 640K
360K Fujitsu Drive
Monographics / Printer Card
XT / AT Switchable Ky Bd
Samsung Monitor
1 yr. Warranty

$429

512 K SYSTEM $509

10 MHz 286

10 / 6 MHz Motherboard
512 RAM Expandable to 1 MB
360K Fujitsu Drive
Monographics / Printer Card
101 Key Keyboard
Samsung Monitor
1 yr. Warranty

$799

12 MHz O WAIT AVAILABLE

TATUNG 386

16 MHz / 1MB RAM
1.2 MB Drive / Controller
Serial / Parallel
Keyboard / Monitor
Manual / FCC
1 yr. Warranty

$2495

LOCAL TECHNICAL SUPPORT

MONITORS

	MONO	COLOR	EGA
SAMSUNG	$68	$224	$338
CASPER	73	238	342

Quimax 14" Mono $138

SPECIAL

80287-8	$239
80287-10	289
411000	$LOW
41256	LOW
4164	LOW

Seagate HARD DISK

	20MB	30MB	40MB	80MB
	$208	$232	$379	$879
Kit	257	287		

All Drives Shipped with Factory Seal

For Sale By Owner

- Used Computer Consignment At Our Store
- Come in & See Used Computers For Sale By Private Owners

We Buy and Sell Excess Inventory: RAM, EPROM, CPU and Math Coprocessor

DRIVE

Fujitsu 360K	$68
Fujitsu 1.2MB	88
Teac 360K	78
Teac 1.2MB	98
Toshiba 3.5" 720K	89
Toshiba 3.5" 1.4MB	129
Alloy Type Backup	469

MOTHERBOARD

XT 8 / 4.77 MHz	$66
XT 10 / 4.77 MHz	78
AT 10 / 6 MHz	269
Baby AT for XT Case	269
AT 12 / 10 / 6 MHz	319

ADD ON BOARD

Mono / Printer Card	$40
Color / Printer Card	40
Everex EGA	128
Everex EGA 800X600	148
EGA / Printer Card	139
XT Mulit I/O	53
AT I/O	48
RS232 Card	25
XT 2nd Serial Kit	14
AT 2nd Serial Kit	22
Floppy Card	
360K / 720K	25
360K / 720 / 1.2 / 1.4M	47
XT Hard Disk Card	58
AT Hard / Floppy Card	120
WA-2	125
XT RAM Ext. Card	34
AT RAM Card 2.5M	84
Printer Card	20
Game Card	18
Clock Card	25

MISC.

HP LASERJET II	$1695
Dot Matrix Printer	165
LOGIMOUSE	77
Keyboard 84 / 101	40/50
Keyboard / Click	56/66
MaxiSwitch KYBD	63/73
Keyboard Draw	35
MODEM 1200	68
MODEM 2400	139
9-25 Pin Convertor	8
RS232 M-F Convertor	7
1-2 Data Switch Box	29
1-4 Data Swiitch Box	44
RS232 Cable 12'	14
Printer Cable 12'	14
Printer Ext Cable 6'	10
XT Case	27
XT Case (AT Like)	35
AT Case	55
Disk Ext Box / Power	79
150W Power Supply	45
220W Power Supply	69
Power Strip Surge	9
Power Pad Surge	22
System Stand	19
Monitor Ext Cable	8
Keyboard Ext Cable	8
Printer Stand 80C	22
Printer Stand 132C	29
Joystick	22

SOFTWARE

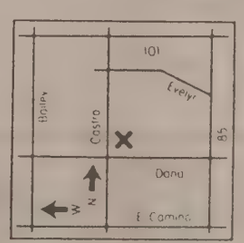
MS-DOS 3.3	$88
Learning DOS	36
Smart DOS	25
Learn to Use PC	25
Learn to use Lotus	55
Lerarn to use dBASE	55
Turbo Pascal	68
Trubo C. Compiler	68
Microsoft Windows	68
Print Shop	50
First Publisher	82
Fast Pak Mail	61
Fast Pak Data	61
News Master	74
Typing Tutor	41
Tournament Bridge	40
Sargon III	18
Flight Simulator	40
Falcon	40
Thexder	26
3-D Helicopter	41
Ultima IV	45
Jet	40
F-15 Strike Eagle	30

DATA-ONE INC.

293 CASTRO ST., MT. VIEW, CA 94041
TEL: (415) 962-1771 FAX: (415) 962-1774

Prices subject to change without notice

• Dealer Inquiries Welcome •
• UPS Shipping Daily •



Activision's Reports: Beating The Card Format's Limitations

By Birrell Walsh

Reporting has never been *HyperCard*'s best point. You might design a very satisfactory address stack in *HyperCard*, or a billing system, or an inventory system. Then you would abandon it part-way through when you discovered that *HyperCard* cannot make mail-merge letters, or (easily) do totals for your data, or make invoices out of your billing data. So what do you do?

Now what you do is to go out and buy a copy of Activision's *Reports*, an apparently complete report system for *HyperCard* which helps you overcome these problems.

When you get *Reports*, you are asked to install a "report card" in each stack from which you may want reports. The report card has slots for a number of reports — you can define as many as you wish, because you can open up a second report card if you wish.

If you choose "Edit Layout" from the buttons on the report card, you are carried to an edit layout screen. On that screen, you can design five different sections of a report. Each section shows on the layout screen as a band, which you can widen or narrow at your choice.

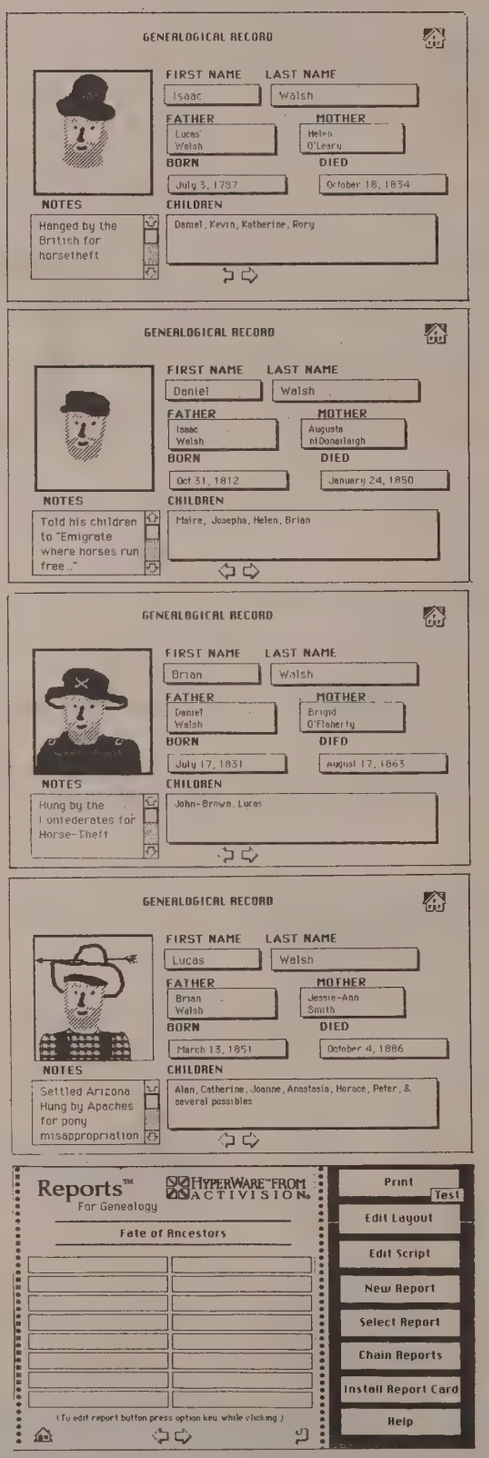
The Header Section will appear at the top of each page. The Detail Section is for each card's data. On it you can design the part of the report which details the information you get from each card. You would use the Detail Section to design the display of the names and addresses on an address list, or of itemized items on an invoice.

The Break Section allows you to design subsections of your report, and to obtain subtotals. I used the Break Section to divide my own financial information for end-of-the-year tax reports. I get all my expenses listed, sorted and totaled by category, with one button push.

The Totals section is suitable for the same purpose, but gathers totals for the entire report. The Footer Section manages the bottom of each page in the same way as the Header Section manages the top of the page.

Like all reports systems for databases, *Reports* can require some try-and-retry. You should be able to make a simple report immediately, but extended and complex works will require some time and programming. Activision has included Preview, a print-to-screen utility, which allows you to do your tryouts without using up paper by printing a full page in miniature to the screen. (You will also be able to use Preview with your other programs, as it gets installed in your System Folder: an added benefit).

Did I say programming? Yep. You can program in *Reports*. The bad news is that you *must* program in *Reports* to create anything but the most elementary of reports. The program is actually a set of XCommands and XFunctions which get installed in *HyperCard*. You can write scripts to use with each section, to pass over cards, to update cards, or to insert graphics in your reports.



When you install a "report card" in your stacks, Activision's Reports program lets you incorporate HyperCard's text and graphics features into a variety of custom reports beyond HyperCard's own capabilities.

The scripts you write are in HyperTalk, the *HyperCard* programming language — another reason for learning it.

I think it was a brilliant move to include graphics in the program. It allows you to use the graphic-cum-text strength of *HyperCard* in your *HyperCard* reports as well. To illustrate it, I designed a quick genealogy stack using my ancestors, a line of aggressive entrepreneurs in their time. As you can see, the reports generator allows me to bring their pictures as well as textual information to the report that I have called "The Fate of My Ancestors." (The cartoons are not Activision's fault. They could be replaced by scanned-in pictures from Thunderscan or by more professional artwork.)

Imagine a real-estate database in *HyperCard* which had a picture of every house scanned in. You could use *Reports* to print out a personalized list of possible houses for clients, each with pictures. *FileVision* is already doing this — but at a considerably higher price.

I wish that Activision had included two additional features: Print-to-Disk in a word-processor format (I guess *MacWrite* would be the best), and print-to-ASCII-file so that at least unformatted text can be sent by modem. I also found one bug — the system bombed when I wrote a particularly arcane script that passed global variables every which way. But this is pickiness. The main verdict is: Bravo! Activision's *Reports* is well done and very, very useful. (*Reports*, $99.95 from Activision, PO Box 7287, Mountain View, CA 94039, 415/960-0410.)

Keep That String Tied 'Round Your Finger

The First Annual (that's such a *hopeful* phrase!) HyperExpo and StackMart will be held Saturday and Sunday, June 11 and 12, at the Civic Auditorium in San Francisco. Tickets are $25 (one day) and $40 (two days) in advance. At the door they will cost five dollars per day more. Why do these shows cost so much? Still, it will be a superb chance to see *HyperCard* Do Its Stuff. If you are a developer, it is an opportunity to show your things and see what the other folks are up to.

You can contact the promoters at American Expositions Inc., 110 Greene Street, Suite 703, New York, NY 10012, 212/226-4141.

Keep Those Cards And Letters Coming!

You can leave messages, comments, praise and blame for stackware and *HyperCard* on the WELL (415-332-6106; user ID "birrell") or CompuServe (User ID 72466,3567) or by US Mail to: Birrell Walsh, 2440 Sixteenth Street #165, San Francisco, CA 94103. □

Copyright © 1988 by Birrell Walsh. All rights reserved.

SPRING SALE

PRICES REDUCED

PRINTERS

IBM Pro Printer II/X24	$395/576	Epson FX86E/FX286E	395/575
IBM Pro Printer XL/XL24	576/756	Epson LQ850/LQ1050	615/899
IBM Quietwriter II/III	799/1224	Epson EX800/EX1000	467/529
Toshiba 321SL/341SL	584/799	NEC P6/P7	504/650
Toshiba 351/351C	1009/1151	Epson LX800	216

PRICES REDUCED

SPECIAL

Aldus/IBM Ver. 3.0 ..... List $795 ..... Sale $505

Aldus/Mac Ver. 3.0 ... List $595 ..... Sale $379

SYSTEMS

IBM PS/2 Model 25 Mono	$995	XT Clone 1 Floppy, 20 MB HD, Color	$1225
IBM PS/2 Model 24 Color	1249	AT Clone 1 Floppy, 512K, Mono	1095
IBM PS/2 Model 30 2 Drive	1272	Apple IIGS, Color Monitor, 3.5" Drive	1399
IBM PS/2 Model 30 20 MB	1699	Apple IIC Color Bundle	899
IBM PS/2 Model 50 20 MB	2599	Macintosh Plus	1295
Compaq Portable II Model 4	2879	Macintosh SE, 2 Floppy System	2086
Compaq Portable III Model 20	3599	Macintosh SE, 20 MB	2699
Compaq Portable III Model 40	4175	HP Laser Jet II	1749
Compaq 386/ 60 MB Deskpro	5399	NEC Multispeed Model 2	1649
XT Clone 2 Drive, Mono System	749	Toshiba 1000 Laptop	859
XT Clone 2 Drive, Color System	875	Toshiba 3100 20 MB HD	3399
XT Clone 1 Floppy, 20 MB HD, Mono	1095		

ComputerLand®

There's only one Number One.™

4941 Junipero Serra Blvd.
Colma, CA 94014

Hours: M-F 10am-6pm
Sat: 10am-5pm

Daly City
Colma

(415) 994-1400

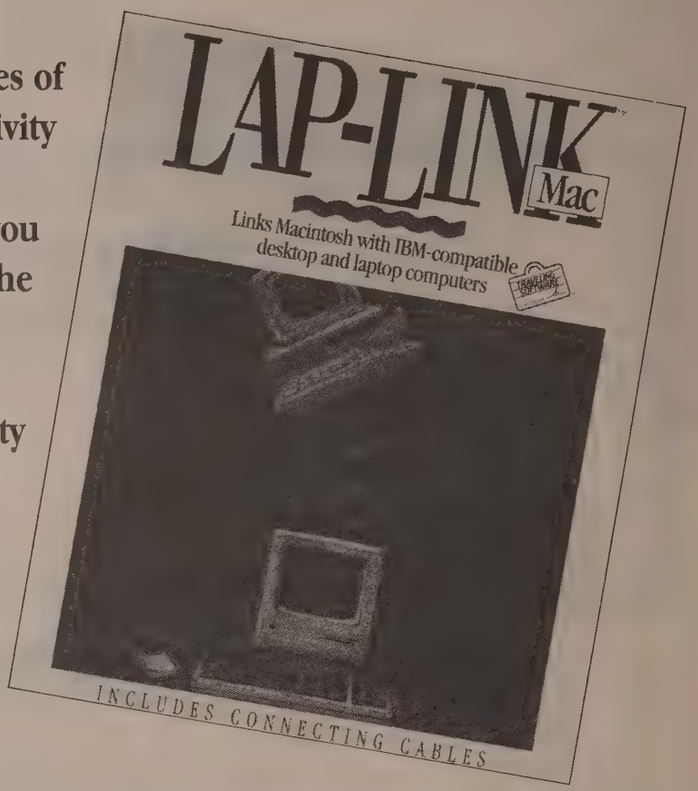
Cash prices only. Prices good thru June 15, 1988.

Lap Link: How Traveling Software Makes Connectivity 'Easy'

Or, Get Your Hand Out Of My Lap, Mac

By Robert Grant Beauchamp

If you have fantasies of Mac to PC connectivity on a low budget, Lap-Link Mac lets you take advantage of the different strengths of each machine, solve incompatibility problems and move lots of files quickly without spending a lot of money.



In my many attempts to get my AT clone, Boris, to "connect" with Natasha, my Macintosh, I've always kept my eye open for any threadbare romancer's dream: the truly cheap date. The principle of the Truly Cheap Date (or TCD) is to carry off the same, or nearly the same, result without the cost of the Terribly Expensive Date (or TED).

Any High School Male (HSM) knows this principle well, as do those without Lucrative Kinfolk (LUCK).

Nonetheless, with a little imagination and a willingness to do without the frills, a TCD can turn out to be just as wonderful a TED, and in any case is better than NADA (No Date At All.)

There are many people who have the need to transfer files between a Mac and a PC, but don't want to spend the money for a network solution. This is especially true for those who want to take PC word processing files and put them into Macintosh desktop publishing programs, such as *PageMaker*.

It is no surprise, then, that the solution to this problem should come from none other than the kings of the cheap date, Traveling Software. Traveling Software has been offering low cost solutions for laptop owners since 1983. What else can you say about a company whose catalog makes you want to buy a laptop just so you can get all that inexpensive stuff that fills its pages? Or for that matter a company whose president, until recently, carried around a Radio Shack Model 100 wherever he went?

If you have ever met Mark Eppley, president of Traveling Software, you know that his youthful enthusiasm is rarely suppressed. Even after having his car stall in the middle of San Francisco's Chinatown on a recent visit, he was more than willing to discuss one of the more important issues facing laptop owners today: how to get *Asteroids* to run.

His loyal public relations rep, a little more frazzled from the day's hectic schedule, was grateful when the discussion moved from video games to the appointed topic of the day, Lap-Link, a product designed to provide a simple and speedy method of transferring files between laptop and desktop PCs.

While I listened to Mark describe the features of Lap-Link, I was saying to myself, "Sure, this is great for laptops, but that's my whole problem — I have an AT that would rather hook up with a slick chick Zenith than Natasha the wallflower. How about a cheap way to transfer files between a Macintosh and a PC? Now *that's* a trick."

When I asked him about this, he said that a product was in the works. Knowing this business, I didn't hold my breath. I needn't have been cynical, however, as, sure enough, along comes Lap-Link Mac.

The advantage of a network is the ability to use files directly off another station's hard drive, share peripherals and printers, and support electronic mail.

The major advantage Lap-Link Mac, on the other hand, is that you don't have to pay a lot of money on AppleTalk connectors, cables, PC add-in boards and network software to simply transfer files back and forth. For $139.95 you get the software and cabling necessary to connect two computers.

Lap-Link Mac works by transferring files through a serial port on the PC and the modem port on the Mac. Compatibility is assured by a special four-way cable that gives you a choice of two connectors for each computer.

On the Mac end of the cable there is a connector for the new round Plus, SE and II ports and one for the older 128K and 512K Macintoshes. On the PC end there is a 9-pin DB9 connector and a 25-pin DB25 connector for whatever size serial port your computer might have.

The only trick to hooking up the cable for Mac-Link Mac is knowing where your PC's serial port known as COM1 is located. Chances are, if your PC is fairly typical, you only have one serial port. If you have a lot of add-in cards, however, you're going to have to take some time to get to know what all those ports are for.

Installing the Lap-Link Mac software is also simple. On the PC you have the choice of altering the AUTOEXEC.BAT file, allowing you to call up Lap-Link Mac no matter what directory you might happen to be in at the time.

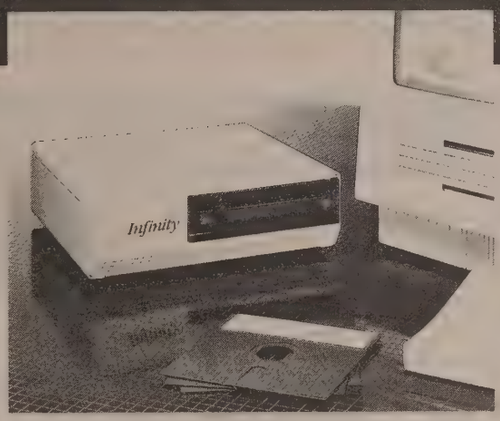
While you don't get all the extras of a network, you do get more with Lap-Link Mac than a simple way of transferring files. You also get speed. Lap-Link Mac transfers your files at the perky rate of 57,600 baud. While this doesn't match the speed of the original Lap-Link for Laptop-PC connectivity (over 115,200 baud) it is still much faster than using two jury-rigged 1200 baud modems. Besides, as Aunt Mildred would say, your PC shouldn't be running with that over 100,000 baud crowd anyway. What's wrong with settling down with a nice 57,600 baud sweetheart?

While all Macs can operate at 57,600 baud, not all PCs can. Lap-Link allows you to lower the baud rate until you find one your PC will

WHAT PERFORMS LIKE A HARD DISK ?

NEVER RUNS OUT OF STORAGE

READS IBM FILES ON YOUR MACINTOSH ??



Introducing Infinity™ Drive by Peripheral Land *---- the SCSI 10MB removable disk system that will change the way you think about disk drives.*

Now you can end the limitations of standard hard disk capacities and their lack of transportable data. ***Infinity™*** *not only performs like a hard disk drive (65 millisecond access time) but it provides unlimited storage capacity with removable 10MB diskettes.*

Run out of room? Just insert another inexpensive diskette. Your storage capacity is infinite. And the cost is amazingly low: Only $18 for a 10 megabyte diskette. That's $1.80 per megabyte!

Communications bridge between your Macintosh and IBM AT and XT computers.

The ***Infinity™*** *System reads and transports IBM MS-DOS files from 1.2M and 360K AT and XT diskettes; it lets you display, edit and print IBM files on your Macintosh. That's flexibility!*

Each ***Infinity™*** *Drive comes with LaserSpeed™ a LaserWriter spooler by ThinK Technologies, BackPrint™ an ImageWriter spooler by Cortland Computer and PLI's advanced backup utility with image, file, folder, volume and incremental capabilities.*

Infinity™ *is compatible with Apple's complete line of Macintosh computers.*

Stop by your nearest Peripheral Land dealer and test drive an ***Infinity™*** *Drive today and see the difference between standard disk drives and* ***Infinity's*** *infinite capacity. Or call us for information and the name of your nearest Peripheral Land dealer.*

Peripheral Land, Inc.

47800 Westinghouse Drive, Fremont, CA 94538

Telephone (415) 657-2211 • Telex 650305-1733MCI • FAX (415) 683-9713

Infinity is a trademark of Peripheral Land Inc. LaserSpeed is a trademark of ThinK Technologies. BackPrint is a trademark of Cortland Computers. Macintosh, ImageWriter and LaserWriter are trademarks of Apple Computer. IBM, AT, and XT are trademarks of International Business Machines. © PLI 1988

work with. As it is only a few PCs that can't work with this baud rate, you probably won't have a problem here.

More Than Just A Cable

Along with speed, there are a host of other features that make Lap-Link Mac more than just a cable to send files over.

If you have a great many files on your PC's hard disk, all with typically cryptic names like WHREAMI.HLP, then you can group files any way you desire. You can tag all the files in a directory, or all those with similar "wildcard" designations.

One of the cardinal rules of Mac-PC connectivity also applies to transferring files with Lap-Link Mac. If at all possible use applications that come in both PC and Macintosh versions. If you transfer a file made in *Word* on the PC, you can designate it as such before copying it to your Mac. This way when you open the file up on the Mac it calls up the application and translates the file into the Mac version format automatically. Lap-Link will let you do this with *WordPerfect*, Aldus *PageMaker* and Microsoft *Excel*. For spreadsheets other than *Excel*, you can format your files into one of the popular spreadsheet formats such as SYLK or .DIF. The Lap-Link Mac manual provides complete documentation on transferring files including *dBASE* files.

Transferring ASCII files is also aided by Lap-Link Mac. If you've ever had to modem a file from a PC to a Mac and then open the file on the Mac you are familiar with what's known around the *MicroTimes* office as "those d--n *WordStar* boxes." To get rid of these annoying little boxes that pepper the file, Lap-Link Mac offers a Carriage Return/Line Feed Conversion option. A carriage return and a line feed on a PC are the same as a carriage return by itself on the Mac. When you select this option the PC carriage return/line feed is translated into a Mac carriage return, thereby eliminating those aggravating boxes at the beginning of each line. It also works in reverse when copying files from the Mac to the PC.

Directory Maintenance

If you don't use programs like *PC Tools*, *Norton Utilities* or *MacTree*, then you're going to be in for a pleasant surprise with Lap-Link Mac. In order for it to do all the wonderful things it does, Lap-Link Mac provides powerful directory maintenance capabilities.

Lap-Link Mac divides the PC screen into two halves (all work is done on the PC, the Mac acts as a "silent partner") with one side providing you with a directory of your PC disk and the other side the Macintosh disk. The command line runs along the bottom of the screen, providing such information as what directory your located in, the COM port you're using and the baud rate you have chosen. Along with providing Help, Copy and Group commands, you can also choose Tree, View, Erase or Rename — commands usually reserved for powerful utilities programs.

To those whose hard disk is a mystery, the Tree command is truly fascinating. It provides a schematic diagram of your directories and subdirectories on the PC and folders on the Mac. Not only does it let you see the structures of your disks but it also allows you to change them. Which means no more cryptic DOS commands such as MKDIR.

While you're cruising around in your newly mapped directories you can also do a number of other functions usually reserved for DOS commands. Once you've entered a directory with the Log command you can erase files, rename them or copy them into another directory. Lap-Link Mac also lets you view a file in order to make sure it's exactly the one you want before you copy or delete it.

Lap-Link Mac And Networks

If you do have a network and want an inexpensive way to add in an incompatible machine, Lap-Link Mac is a good way to do it. While you won't be able to take advantage of all the network's capabilities, you won't have any problem transferring files over your network with Lap-Link Mac software.

If you have fantasies of Mac to PC connectivity, but your pockets are just about empty and you're willing to do without network capabilities, Lap-Link Mac could be your dream date. You can still take advantage of the different strengths of each machine, solve incompatibility problems and move lots of files quickly without spending a lot of money. And remember a truly cheap date can be as much fun as a truly expensive date, you just can't brag about it as much.

Traveling Software
North Creek Corporate Center
19310 North Creek Parkway
Bothell, WA 98011
(206) 483-8088 □

FULL SERVICE AT DISCOUNT PRICES

DEMO FOR ALL SYSTEMS AND DESKTOP PUBLISHING

WYSE 386 — 40MB Hi-Res ZERO WAIT — **$4095**

HIGH RES OPTION FOR CAD AND DESKTOP PUBLISHING
- Modular System Architecture
- 80386 CPU At 16MHz. 0 Wait State
- Dedicated 32 Bit Memory Bus
- WYSE 700 Monitor With Controller
- 1280x800 Pixel. Ideal For ACAD or Ventura
- MS Dos 3.21 With Enhanced Features
- 40mb 28ms Hard Drive

MICROTEK Scanner — **CALL**

MODEL MSF-300C IMAGE SCANNER
- Flat Bed For Easy Scanning
- 64 Shades Of Gray In Half-tone Mode
- High Resolution 300 By 300 dpi
- Scanning Software With On Screen Editing
- OCR Options For Character Recognition

PRINTERS

Epson FX286e	LOW
Brother 1509/1709	$395/565
Brother HR20/HR40	399/735
NEC P6/P7/P2200	489/635/369
NEC Laser Printer LC-890 PostScript	3399
HP Laser Jet II With Toner	1675
Fujitsu All Models	call
Citizen All Models	call
Okidata All Models	call

CARDS

EVEREX EVGA (1280x600) Analog or Digittal	$295
VEGA VGA	325
Paradise VGA	295
Genoa Super EGA (800x600)	185
Paradise Autoswitch (750x350)	149
Everex EGA	135
AT RAM Card (EMS) 2.5MB	99

DRIVES

Floppy Drive: Fujutsu,Toshiba,Teac,Mitsumi	call
Hard Drives: Seagate,Minicribe,Micropolis Microscience,Maxtor	call

ACER 1100 — 386 SYSTEM MONO 40MB — **$3465**
- 80386 CPU at 16MHz. 0 Wait State
- Dedicated 32 bit Memory BUS
- RAM BIOS Allows I/O Optimization
- 40MB 28ms Hard Drive
- 14 Inch Monochrome Monitor
- Utilities Provides LIM EMS Support

WYSE 2112 — MONO 40 MB — **$2395**
- Modular System Architecture
- 12/8 MHz 80286 CPU
- 1 MB Memory
- Front Panel Status Display
- WYSE 530 Monitor 14 Inch
- MS DOS 3.21 With Enhanced Features
- Seagate St251 40MB Hard Drive

WYSE 2108 — 8 MHz CPU , 20 MB hard drv., mono system — **$1745**

WYSE 2200 — 10/6 MHz CPU, 20 MB hard drv., mono sys. — **$1895**

MONITORS

Sony Multiscan	$625
NEC MultiSync II	595
NEC MultiSync Plus / XL (19")	945/2359
NEC MultiSync GS	235
Taxan Multisync 770+(800x600)	565
Casper Mono/EGA	89/399
Samsung Mono/EGA	89/395
Wyse 530 (amber/green)	195
Wyse 700 Hi-res (1280x800)	795

MODEMS

Everex 1200Int/2400Int	$89/169
Avatex 1200hc External	129
Telemidas with Bitcom 1200Int/2400Int	79/149
USRobotics 2400 Int/Ext	199/209

SOFTWARE

Pagemaker	$555
Ventura	499
MS Dos 3.3	85

WYSE 2214 — GENOA EGA TAXAN 770+ — **$3395**

40 MB SUPER EGA SYSTEM
- 12.5MHz at Zero Wait State
- Genoa Super EGA (800x600)
- Taxan 770+Multisync Monitor
- Seagate 40 MB dirve (28ms)
- MS DOS 3.21 With Enhanced Features
- 12 Months Factory Warranty

AST PREMIUM — 386 286 — **CALL FOR PRICES**

PREMIUM/386
- 20MHz CPU at 0/1 Wait State
- MS OS/2 Compatible; Multimaster Bus

PREMIUM/286
- 10MHz Zero Wait State
- Model 120, 140X, 170

!! SPECIAL !!

CIMPEX 12 MHz AT	CIMPEX 10 MHz XT
90 % Speed of 386 CPU	Fastest XT in the Market
12 MHz CPU at 0 Wait	10/4.77 MHz CPU
512K Expand to 1MB	640K Memory
Hard Disk Controller	12" Mono Monitor w/T/S
1.2MB TEAC Floppy Dr.	MGA with Printer Port
12" Mono Monitor w/T/S	AT Style Keyboard
MGA with Printer Port	Clock & Calender
AT Style Keyboard	Can Use 1.2 MB Drive
$1195	$595

This AD is done with Ventura Publisher. May 1988

Cimpex computers

1398 EL CAMINO
MOUNTAIN VIEW
(415) 964-5000

(Between Bailey & Rengstorff)

Because of currency fluctuations, prices subjected to change without notice

Macintosh Training

May -June 1988 Class Schedule

Redwood City Store

Description	May	June	Time	Duration	Tuition
Introduction to Macintosh	19-20	16-17	8:30a	8 hrs	$195
Macintosh Familiarization	5	2	1:30p	4 hrs	$ 99
Microsoft Word	26-27	23-24	8:30a	8 hrs	$195
PageMaker	5-6	2-3	8:30a	8 hrs	$195
Desktop Publishing	19	16	1:30p	3 hrs	$ 60
Introduction to Excel	12-13	9-10	8:30a	8 hrs	$195
Apple II GS	18	15	7:00p	2 hrs	$ 40

Campbell Store

Description	May	June	Time	Duration	Tuition
Introduction to Macintosh	11-12	15-16	8:30a	8 hrs	$195
Macintosh Familiarization	25	29	1:30p	4 hrs	$ 99
Microsoft Word	18-19	22-23	8:30a	8 hrs	$195
PageMaker	25-26	29-30	8:30a	8 hrs	$195
Desktop Publishing	11	15	1:30p	3hrs	$ 60
Introduction to Excel	4-5	8-9	8:30a	8 hrs	$195

Macintosh Familiarization

In just four short hours, our Mac Familiarization course will help you become comfortable with your new Macintosh. The class will teach how to:

- Use the mouse; Work with the desktop including windows, icons, menus, applications and documents;
- Create documents and folders, disk management, and basic troubleshooting.

You will also recieve tips to help you use the Mac more creatively and confidently-plus have fun while you're doing it!

Microsoft Word

From the simplest memo to the most complex report, Microsoft Word helps make your daily writing tasks fast and easy. Learn to:

- Create,edit,format, and print documents;
- Use Word's time saving features.

To benefit most from this class, you should have completed The Intro to Mac or Macintosh Familiarization class or be familiar with the Mac's operation, including the desktop, windows, icons, menus, applications and documents.

Introduction to Microsoft Excel

A combination spreadsheet, business graphics, and database program, Microsoft Excel turns the full power of your Macintosh to today's business problems.

During this course, you learn to:

- Create, format, and print spreadsheets;
- Customize and print graphs of data computed on the spreadsheets;
- Create, search, sort, and print a database.

Prerequisites for this class are the same as Microsoft Word.

PageMaker

Pagemaker brings all the power of the printed word to the Macintosh. Its powerful capabilities allow you to produce professional looking publications. This course introduces you to:

- Desktop publishing
- Creating and editing publications
- Combining graphics and text for visual appeal.

You'll produce great looking documents in no time-even if you have no previous graphics training. Prerequisites for this class are the same as Microsoft Word.

Guarantee

We guarantee you will be satisfied with our classes.

If for any reason you would like to take a class over, we will gladly let you do so on a space available basis.

Registration

Advance registration is required to reserve class space. To register, call the store nearest you and register for the class(s) of your choice.

The tuition payment must be received prior to the day of the class.

Heath Zenith Computers & Electronics

VISA

Heath Revolving Charge

Heath Zenith Computers and Electronics

Redwood City
2001 Middlefield Road
(415) 365-8155

Campbell
2350 S. Bascom Ave.
(408) 377-8920

15% OFF Coupon

Bring or mail in this coupon and recive an additional 15% OFF your class tuition!

Name _____

Address _____

City _____

State & Zip _____

Brøderbund Shows Off, Claris Shows Up And The Netman Cometh

By Mike Markowitz

"Instructional technology" in the American classroom is often still limited to the Neolithic age of chalk-on-slate. Indeed, the Stone Age instructor probably had more mineral pigments and applied them to the cave wall more skillfully, being less constrained by clocks and lesson plans. Until quite recently, "advanced instructional technology" meant overhead projectors and 35 mm slides.

Then we got computers...

The great limitation of the computer as a medium of classroom instruction is the small number of students who can view the screen at one time. For larger students, of an age that hates being jostled shoulder-to-shoulder, the number shrinks toward "one." Large-screen monitors help a little, but they can be expensive, and hard to adjust. The new liquid-crystal screens that echo a computer display on the stage of an overhead projector could be a real breakthrough for classroom computer-aided instruction.

Meanwhile, check out *Show Off*, from Brøderbund, a software tool for creating and presenting "slide shows" with the Apple IIGS. For about the same cost as printing a few rolls of 35 mm color slides, you get the capability to quickly produce, reproduce, and display an unlimited number of text-and-graphic frames. A floppy disk is a lot more compact than a slide carousel, and your frames will never be upside-down or out of sequence.

Designed in France by Pierre Berloquin and Denis Freidman, and programmed for the IIGS by Serge Hervy, *Show Off* is an object-oriented graphics package, with strong editing, sequencing and presentation features. It uses the 16-color, 320 x 200 graphics mode, without any option to edit the color palette. For a simple program, this is a good design choice, since it prevents the user from messing up the colors.

There are quite a few different kinds of objects you can put into a frame. "Icons" are small colored graphics. The program disk includes over 380 of them, organized in a thematic library. "Stickers" are larger (*Print Shop* sized) graphics that can be imported from any *Print Shop IIGS*-compatible collection. There are 144 cute borders (with tiny thematic icons at each corner).

You can create a self-running "slide show" disk by copying certain files from a demo disk included in the package. The manual could explain this a little more clearly, and it should be printed in a larger typeface. A Teacher's Guide packed with ideas for using *Show Off* is available to schools. Apple considers "desktop presentations" to be one of the most important growth areas for personal computers, but until now, this area has been entirely a Macintosh show. *Show Off* brings this capability to the Apple IIGS. (Brøderbund, 17 Paul Drive, San Rafael, CA 94903-2101.)

Mike Markowitz is a computer engineer for a large Southern California aerospace firm. He has been writing about Apple II hardware and software since 1984. *Copyright © 1988 by Mike Markowitz.*

AppleWorks

Claris, the company Apple begat in order to get itself out of the software business, has released its repackaged version of *AppleWorks*, version 2.0, the most popular integrated software package (word processor, spreadsheet, database) in the world. Except for the logo on the label, this is exactly the same product Apple had been selling for over 16 months. Claris has not only started to advertise the product (something Apple never did), it has actually begun to provide technical support to registered owners (also something Apple never did). This is the best news AppleWorks have gotten in a long time. The $249 package includes a complete set of 5.25" and 3.5" disks, a reference manual and a tutorial. Remarkably enough, the program still uses ProDOS version 1.1.1 (vintage 1984), now patched to recognize the clock in the IIGS. The rest of the Apple II world is using ProDOS version 1.4, which seems to be bug-free.

If you haven't upgraded to version 2.0, you should know that it includes a nifty mail-merge function, improved memory management, and some 16-bit code optimized to run on the IIGS. If you have an earlier version of *AppleWorks*, the upgrade costs $75 from Claris until September 30, 1988. Call (800) 544-8554 for the details.

Almost any imaginable enhancement to *AppleWorks* is already available from companies like PinPoint and Beagle Brothers, but I would still like to see on-screen underlining, boldface and italics some day. I also wish the printer driver (SEG.PR) would auto-load itself into RAM like the rest of the code, so the program doesn't have to go back and spin the disk every time you go to print something. There has been some wishful thinking about a mouse-driven, icon-based *AppleWorks* for the IIGS, but given the sluggish performance of existing word processors, databases and spreadsheets designed for that machine, it would not be worth the effort. At least not until we have a much speedier IIGS.

The real surprise from Claris was the announcement (on March 1) of a *network* version of *AppleWorks*, to be released concurrently with the new AppleShare file server software. This will make it possible for a Macintosh to operate as the file server for an AppleTalk network of IIe and IIGS "workstations."

Caught In The Net

Apple is promoting the network idea for schools as a way for many student computers to share expensive peripherals like laser printers, hard disks and the new Apple CD-ROM drive. Apple's K-12 educational network strategy is built around six new products (announced March 1, but available by Summer).

AppleShare File Server version 2.0 makes it possible to store and launch specially-programmed ("AppleShare-aware") ProDOS applications from the hard disk of a Mac Plus, Mac SE or Mac II. The file server can support Macintosh, MS-DOS and ProDOS operating systems *concurrently*, making it possible to share information between incompatible systems.

AppleShare Print Server allows up to five LaserWriter or ImageWriter printers on the network to be spooled simultaneously.

Apple II Workstation Card gives an enhanced Apple IIe access to the network, and makes it possible to run programs from the file server without a local disk drive. "Diskless startup" reduces the need to control, handle, back-up, and worry about floppy disks for each computer. With 16K of RAM and 64K of ROM, the board has both an AppleTalk connector and a Super Serial port.

AppleShare IIGS Workstation Software. Since the AppleTalk firmware is built into the IIGS, the machine needs only this program to operate as part of the network.

Inter.Poll is a network administrator's utility that lists active network devices, monitors the network and locates cabling breaks.

About a dozen educational software vendors have announced Apple II network applications, including completely new programs and network versions of old classics.

I don't like networks, because they symbolize centralized, authoritarian control, the antithesis of the personal empowerment represented by individual "stand-alone" computers. When you gain that access to the laser printer, the big database, the electronic mail and all the other network goodies, you are giving up a certain measure of freedom, to run whatever you want, when you want. When the network can lock you out, override you and require a password just to log on, then it's not your system anymore. I think kids are pretty sensitive to these issues.

It's inevitable, of course. If kids are going to grow up to be docile wage-slaves, chained to IBM workstations, it's grimly ironic that they should be schooled at Apple workstations. Behold the Trojan File Server, bearing gifts. Nineteen eighty-four arrives, four years late.

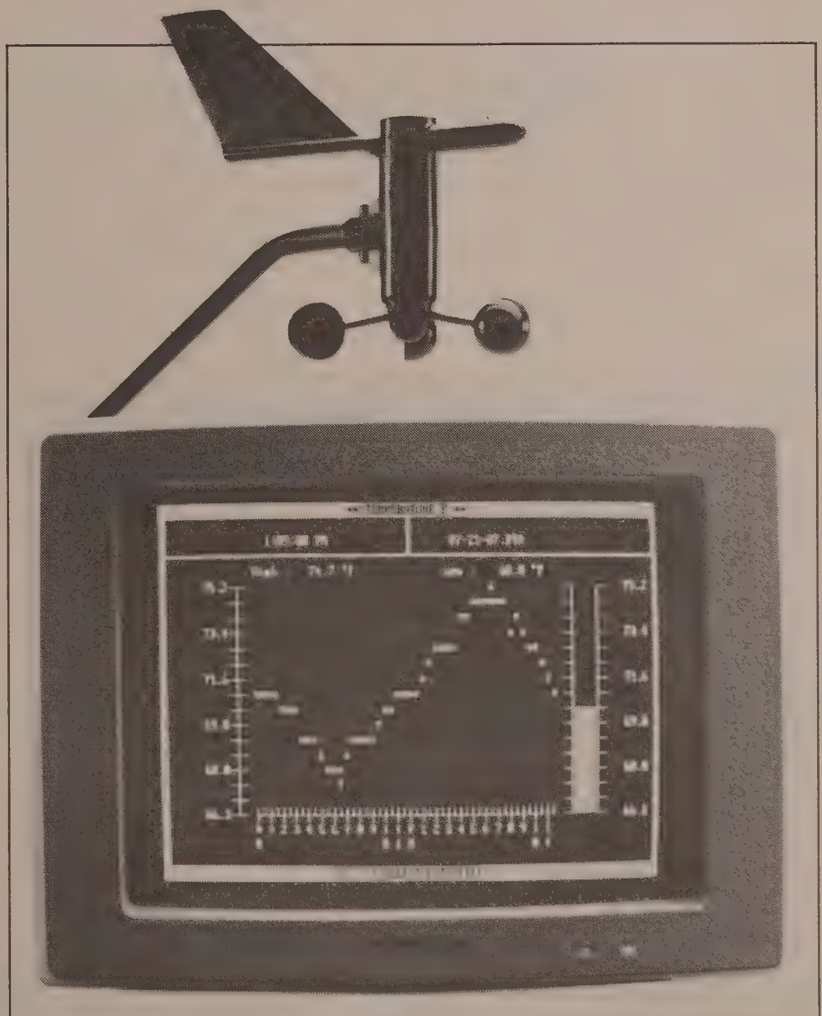
Every year for the past five or so has been hailed as "the year of the network" in personal computing, but it looks as though Apple is getting serious this time. Before school principals and administrators jump on the network bandwagon, however, they should give some thought to the costs and benefits. A fully configured file-server is a big-ticket item, and AppleTalk cabling is priced such that many believe it is spun in Heaven from the golden hair of angels. Floppy disks may be vulnerable to damage or abuse in young hands, but network cabling is likely to prove even more vulnerable under the onslaught of young feet. The duty of network administrator is a thankless task, that likely as not will land on some overworked teacher, who will have that much less time to spend with students. For the cost of a network, a school could easily put a lot more standalone computers on a lot more desks. (Claris, Inc., 440 Clyde Avenue, Mountain View, CA 94043, (415) 960-1500. Apple Computer, Inc., 20525 Mariani Avenue, Cupertino, CA 95014, (408) 996-1010.) □

Order Now!
$50 off orders
placed by June 30th!

Now your computer can measure the wind speed and tell you when to carry your sunscreen.

Wonder what the weather holds? Just ask your computer. With PC Weather Pro, your IBM PC, XT, AT or compatible can have its own weather monitoring system... ready for viewing at the push of a button. And, you can even keep a perpetual record. PC Weather Pro includes hardware, software and weather instruments. **Here's what you'll measure and display** • Wind speed and direction • Inside and outside temperature • Barometric pressure • Wind chill factor • Rainfall

PC Weather also includes: • Real time clock • Programmable weather alarms • On-board buzzer • Background resident software • Other software options are available. Ask when you call.



ONLY $575 VISA MC/AMEX accepted

Call toll free 1-800-247-5712 In Oregon call (503) 635-3966
4000 Kruse Way Place, 2-210, Lake Oswego, OR 97035

TMI inc.

DOS Files On Your CP/M Machine With DOSDISK

By Robert D. Athey Jr.

When the naysayers sit around discussing the demise of CP/M, they most often cite the slowness of the older CP/M machines and their incompatibility with DOS (jargon for PC-DOS or MS-DOS), Apple or other disks from the "more popular" operating systems. Although there are translation programs out there, like the *Media Master*, *UNIFORM* or *COMPAT* programs we reviewed about a year ago, there's something new to help extend the useful lifetime of your CP/M machine.

The new program comes from a group that's been working on the upgrade of CP/M for many years — the Plu*Perfect people of Santa Monica. Their past accomplishments include the enhanced CP/M we reviewed in 1986, the *BackGrounder* program (RAM resident notepad, calendar, calculator, etc.) and the software for the Advent Turbo ROM. They started out as a little firm with corrections for the *Perfect Writer* word processor program around 1984, and still support their CP/M customers.

Their newest program, a worthy addition, is called *DOSDISK*. Bridger Mitchell, Plu*Perfect's resident programming guru, has devised a way for the CP/M computer to run disks from the MS-DOS computer, just as if they were CP/M disks. That's right, do word processing with *WordStar* on the MS-DOS formatted disk just like it was a CP/M disk. Believe me, it works with no silliness, special commands, translation programs, or other annoyances.

The *DOSDISK* program comes as a single disk, with seven relatively small programs or files on it, and 38 pages of documentation, all in the same envelope.

One caveat: the program is *not* designed for all CP/M computers. It only works with those computers fitted with the Advent Turbo ROM, the ON!, the QPM operating systems (another enhanced CP/M), the Morrow MD3 or MD11, and some other special computers (see Figure 1). I got my copy preconfigured for the ON! computer and had a ball setting it up.

Starting up was easy, as I just put the disk into the disk drive and copied the "DOSDISK.COM" file into an empty user area in the ON! computer's RAMdisk. I then set up (following the directions of the ON! menu) the auto-run command in my main menu, called up the program with the menu command, and got the screen message that the disk drive was enabled to read/write to a DOS disk.

Bob Athey has over 20 years of experience working on computers and runs his own company on chemical consulting and contact research. He can be reached through MicroTimes or at (415) 526-3541. *Copyright © 1988 by Robert D. Athey Jr. All rights reserved.*

DOSDISK lets the CP/M computer to run MS-DOS disks just as if they were CP/M disks. That's right — do word processing with WordStar on the MS-DOS formatted disk just like it was a CP/M disk. It works with no silliness, special commands, translation programs, or other annoyances.

I tested *DOSDISK* with a simple transfer of some book chapters from my Z-159 into the archival collection in my A4 user area in the ON! RAMdisk. I was able to look in on my DOS disk with the CP/M *NewWord*, as well. The operation is just as if the disk was an ON! or Kaypro CP/M disk! Why didn't somebody come up with this sooner?

You'll need to use *DOSDISK*'s simple on/off toggle, as the program will not read a CP/M disk while it is toggled on. You'll need to know just three simple commands:

"DOSDISK ?" or **"DOSDISK//"** — Query as to what's toggled now;

"DOSDISK D:" — Command to activate *DOSDISK* for drive D;

"DOSDISK OFF", **"DOSDISK CPM"** or **"DOSDISK CP/M"** — Command to toggle back to the CP/M mode.

There is also a command that allows use of *DOSDISK* simultaneously with Plu*Perfect's *BackGrounder* program, but the documentation offers several cautions about doing so. I don't use *BackGrounder* myself, as the ON! has a similar RAM resident command set, so I didn't test it for incompatibility problems.

The disk containing *DOSDISK* also has some utility programs for moving files, looking at directories, making or looking at subdirectories, and other utility functions on the MS-DOS disk. These will be handy for those who want to do extensive work on the content of the disks.

Another caution is that you only have use of the information on the MS-DOS disks, and you can change that information with your CP/M word processor, spreadsheet or database programs. You still cannot run an MS-DOS *program* on your CP/M machine, for quite a variety of reasons, among them the 64K limit on RAM. My CP/M programs run quite well, thank you, so that's not a problem.

The documentation is quite simple and easy to follow — up to a point. The error messages are right up front, and the operation of the *DOSDISK* program is as straightforward as I've indicated. The rest of the documentation deals with special commands of interest to programmers only, as far as I am concerned. I am delighted to report that the documentation tells of known incompatibility problems between *DOSDISK* and about a dozen programs, including some of the standard utilities like CP/M's "STAT" command.

Figure 1:
Computers That Can Use DOSDISK

Commodore C128 with CP/M3 and 1571 drive
Oneac ON!
SB180 & SB180X with XBIOS
Ampro Little Board
Xerox 820-1 with Plus2 OM and QPM
Morrow MD3 and MD 11
All Kaypros with KayPLUS ROM and QP/M or CP/M
KayPros with TurboROM

It pays to read the documentation here to find out what you can't do, as well as what you can. I'd like to have seen an index at the end of the documentation, but perhaps 1-3/4 pages of Table of Contents should suffice.

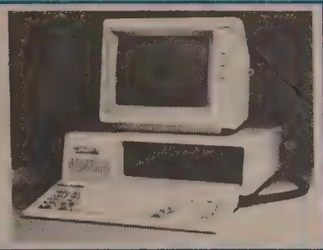
You can buy a version of this program in "kit" form, provided you are up for the assembly language adaptation of the program to your computer. The documentation has a section outlining the theory behind the operation, and information on what you need to do where.

One last note before I escape. Kaypro has some new representatives for the SF Bay area. I've met both recently, and it looks like they're getting geared up to give more support to their sales outlets, repair technicians, and user groups. The new guys are Don Ziegler (707/575-5734) and Tom Forest (619/481-4300 or -4329). We look forward to hearing more from them. (DOSDISK is available for $35 from Bridger Mitchell, Plu*Perfect Software, 410 23rd Street, Santa Monica, CA 90402. The ON! Computer is available from ONEAC Corporation, 27944 N. Bradley Road, Libertyville, IL 60048, 312/680-4680.) □

AMERICAN DIGITAL DISCOUNT ASSOCIATION

SUPER iXT SYSTEM

with Floppy Drive
Floppy Drive Controller
Monochrome Monitor
Video Card
20 Mb Hard Disk
V-20 Chips



Model II/8MHz 895.00
Model III/10MHz 945.00

Super iAT/12.5 MHz System

Super iAT/12.5 MHz System

• 0 or 1 wait state • 1.2 MB floppy drive • 40 MB hard disk (39 ms) • Hard disk and floppy drive controller • Monochrome monitor • Video card w/printer port • With 0k memory • 101 enhanced keyboard

$1295

please call for Super iAT 20 MHz

ACER 386 System

ACER 1100

CPU — Intel 386
16 MHz Clock Speed
1.2 Mb Floppy Drive
40 Mb High Performance Hard Disk . . . . . **$CALL**

TOSHIBA LAPTOP-3120

AT Power in a Compact Size
GaS Plasma Screen
8MHz Speed
640K Memory
One 3.5'' 720K Floppy Drive
Parallel/Serial Port
20 Mb Hard Drive

T3120 Laptop $ Call
T1000 Laptop $ Call

TAPE BACKUP SYSTEM

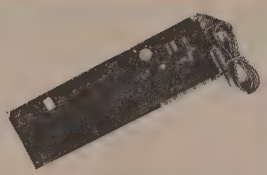
ARCHIVE 60Mb Tape Backup
Self Contained & Menu Driven Image & File by File Backup • PC/XT, AT & Compatibles
Quick Data Format

Internal **$495**
External **$595**

MODEMS

1200 Baud Internal **$89**
Fully Hayes Compatible

ADDA 2400 Baud Internal
w/ProCom Software
Support Com 1 - Com 4
Made in U.S.A. **$139**



U.S. Robotics 2400 Baud
Internal w/BitCom Software
Made in U.S.A. **$169**

EGA MONITOR

TAXAN 770 Multivision
14'' Screen, 800x600 . . . . . **$525**

TAXAN 765 Monitor
14'' Screen, 650x350 **$415**

TATUNG 1380 Monitor
13'' Screen, 650x350 **$395**

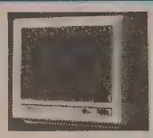
EGA CARD

Genoa EGA CARD **$165**
800 x 600

ATI NEW ENHANCED CARD
Auto-switch Capability, 800x560, 132 Column emulation supports VGA, EGA, MGA, CGA **$195**

RGB MONITOR

CGA Spec.
640x200
Resolution.



TAXAN 720 . . . . . **$275**
TATUNG 1360 **$325**
ADDA RGB **$245**

PRINTERS

240cps in Dot Matrix. 50cps in Near Letter Quality. Epsen 286 Compatible Tractor & Friction Feed.

FORTIS DM2015 - 132 Col. **$395**
FORTIS DM2010 - 80 Col. **$345**
DM1310 130cps, 80 Col. **$199**

EPSON PRINTER 300cps, NLQ Mode
EX-800 80 Col. (OEM) **$ Call**
EX-1000 132 Col. (OEM) **$ Call**

HARD DRIVE for PC/XT

20 Mb w/Controller **$295**
30 Mb w/Controller **$345**
80 Mb w/Controller **$795**
100 Mb w/Controller **$1495**

HARD DRIVE for PC/AT

20 Mb ST-125 (28mS) . . . . . **$CALL**
30 Mb ST-138 (28mS) . . . . . **$CALL**
40 Mb By Seagate (39mS) **$425**
40 Mb ST 251-1 (28mS) **$495**
80 Mb By Seagate **$745**
120 Mb By Maxtor, 25mS **$2995**

TTL MONO MONITOR

TTL Monochrome Monitor
Taxan 123 Green **$109**
Taxan 124 Amber **$119**
Tatung Green **$ 99**
Tatung Amber **$109**
ADDA Amber **$ 89**

SPECIAL OF THE MONTH

Thompson Multisync Monitor
Model 4460D
14" screen, 800 x 600
Special Sale:
$425

EMS CARD

0K Expandable to 2.5 Mb
Supports EMS Standard
Works with Lotus Release 2 Etc. w/Software

For AT **$89**

D-RAM 41256 **$ Call**

ADD-ON CARDS

Mono Graphic/Printer Port **$49**
Color Graphics Card **$49**
CGD & MGD Combo Card **$69**
XT Multifunction w/384K Memory **$159**
XT Multi-I/O Card **$69**
XT Mini-I/O Card **$59**
AT Mini-I/O Card **$69**

LASER PRINTER

LASER PRINTER By HP Laser II
$1695

PC XT/AT KEYBOARD

KEYBOARDS for IBM PC/XT, AT

Enhanced AT Keyboard **$79**

FLOPPY DISK DRIVES

XT-360K **$79**
AT-1.2 Mb **$99**
AT/XT-3½'' **$99**
Apple IIC & IIE **$125**
MacIntosh MAC-800K **$195**

POWER SUPPLY

Uninterruptable Pwr Supply
Power Failure Interrupt Signal to Computer
Back-up Power for 15 Min.
Noise Surpression & Surge Protection

500 Watt **$ Call**

POWER SUPPLY

150 Watt Power Supply
For PC/XT **$49**

200 Watt Power Supply
For PC/Baby AT **$69**

200 Watt Power Supply
For PC/AT **$79**

SYSTEM SOFTWARE

(New)
MS DOS 3.3
w/GW BASIC
$ Call

New Case

IBM Model 50
Compatible Case
$CALL

IBM MODEL 80
Compatible Case w/270W Power Supply
$CALL

ACCESSORIES

8087 Chip **$ Call**
80287 Chip **$ Call**
Printer Cable **$12.00**
2-Way Data-Switch Box **$29.00**
3-Way Data-Switch Box **$39.00**
Power Directory **$39.00**
Power Directory with Modem Protection **$69.00**

Prompt delivery, usually shipment within 48 hours (except personal check orders). We welcome major educational institutions and government agencies to establish open accounts (P/O) status with us to facilitate shipment of orders. Write or call for details.

Prices quoted above do not include UPS shipment charges.
Prices subject to change without notice.
California residents add 6½% sales tax.
Mastercard or Visa add 3%

Business hours: Mon.-Sat. 8:30am - 5:30pm

IBM PC is a registered trade mark of IBM Corp.
TAXAN is a registered trade mark of TAXAN Corp.
©1987, American Digital Discount Association

AMERICAN DIGITAL DISCOUNT ASSOCIATION, INC.
In Torrance
4040 Spencer St., #M
Torrance, CA 90503
(213) 542-3578

Part 2

New Amiga Operating System: KS/WB 1.3

By Matthew Leeds

Last month I introduced the new operating system coming for the Amiga. This month I will cover those features I didn't have room for last month. As before, I must caution you that my information is based on a preliminary release version and may be subject to change prior to the final release of KS/WB 1.3.

Fast Filesystem

One of the most significant additions to 1.3 is the new fast file system (FFS). This long-rumored improvement to hard disk performance really does exist, and the performance increase is remarkable. A little background may help you in understanding how the new FFS works.

The old filesystem stored data blocks with 24 bytes of header information and 488 bytes of user data. This forced the old filesystem to read one block of data, decode the block (remove the header info and pass on the user data), and then fetch a new block. The FFS stores only user data in data blocks. This lets DMA hard drives transfer data directly from disk to memory. This is a turbocharge for your hard disk system. Speed can be improved to 5-20 times the usual performance of your application. In addition, since you are no longer storing header information with data, you gain an additional 50KBytes per megabyte of space.

Nothing comes for free, and there are some tradeoffs. Non-DMA hard disk controllers will not see such significant improvements in speed. Since the header information that was removed from data blocks was used as redundant protection against hash chain corruption, there is a slightly lower chance of recovering data from a crash. A few programs will not operate with the FFS. And since the Commodore 2090 hard disk controller auto-mounts the old filesystem, you must give up about 60KBytes (one or two cylinders) on your hard disk to the old filesystem.

I've installed the FFS on my hard disk system (PAL expansion chassis with Seagate ST225 20MByte drive) and the speed improvement is amazing. The disk access LED no longer blinks, it just comes on, loads the file, and goes off. High-res pictures come up in an instant, DOS commands operate as if from a RAM disk, and I can no longer go out for coffee while loading a *DigiView* RGB file.

New Printer Support

There is also a new printer.device and a new set of printer drivers to go along with it. The new printer.device supports automatic centering of images on your page, several different forms of dithering including ordered, half-toning, and Floyd-Steinberg (used for color printing of facial tones), and color correction to better match the screen colors to the final page output. The entire printing process is much faster. You will notice the improvement mostly while printing graphics.

One of the most significant additions to 1.3 is the new fast file system (FFS). This long-rumored improvement to hard disk performance really does exist, and the performance increase is remarkable.

The new printer drivers include improved versions of the old drivers and some new ones. The new drivers include support for the Epson, NEC, and Toshiba 24 pin dot matrix printers, the CalComp ColorMaster and ColorMaster2, the Hewlett-Packard DeskJet and PaintJet, the Hewlett-Packard LaserJet II, the Okidata 293I, and the Canon PJ-1080-A. If you are shopping for a great color printer, I recommend the Hewlett-Packard PaintJet printer. It's dead quiet, puts out saturated colors, is virtually maintenance free, and has an excellent NLQ mode.

New Preferences

Along with the new printer support is a new Preferences. Most of the changes are in support of the new printer.device, but there are other changes as well. If you make changes to the date or time in Preferences and select Save, those changes will automatically be saved to the battery-backed clock in the 2000 and 500 if present. The CLI ON/OFF option no longer exists. The CLI icon will be in the System drawer.

A new option has been added to the Grey Scale selection — Grey Scale 2. This option is in support of the new A2024 monitor (see below). Additionally, a new Graphic Select screen has been added to support the new printer.device features. You can select automatic antialiasing, set the left offset (margin) for an image or turn on centering, select the amount of color correction, and the width and height limits of an image by tenths of an inch or pixels.

You can also control the density of the printed output to speed up a draft output of a graphic, control the dithering used by the printer, and set the scaling used by the printer. The scaling and width and height controls provide a tremendous amount of control over the final result of printing a graphic. For example, by settings in Preferences you can force a program to output a graphic to an exact size, to scale a graphic only in integer pixel amounts (to preserve exact aspect ratios), or to scale a graphic to fit a specific width or height letting the driver handle the calculations to decide the other dimension.

Etc.

Not as exciting to most, but of interest to everyone who wants to get the maximum performance out of their Amigas, are the new 1.3 IEEE Double Precision Libraries. These new math libraries are up to seven times as fast as the old libraries, and average twice as fast for basic math functions. They also allow developers to write a single program that operates with standard Amigas, Amigas with 68020/68881 boards, and Amigas with standalone math coprocessors. This provides a standard operating environment for the development of standalone 68881/68882 boards such as the Microbotics Starboard math coprocessor option.

Commodore has reached an agreement with Adobe to license some of the Adobe screen fonts for the Amiga. Four screen fonts will be included with the new operating system. These screen fonts are equivalents for the most commonly used PostScript fonts, and provide a better WYSIWYG correspondence for desktop publishing applications.

The Commodore A2024 monitor is a grey scale monitor that contains a frame buffer driven by the Amiga's RGB port. It offers several display modes including a 640X400 non-interlaced, eight grey scale display and a 1008X800 two or four grey scale display. Before you start drooling, keep in mind that we are talking about a monitor that will require a 1MByte minimum Amiga; you won't see maximum use of the monitor until the new chip set providing 1MByte of chip RAM becomes available. A few simple calculations will suffice.

The new monitor requires the loading of a new library into chip RAM that uses 16KBytes, and two libraries that use up 125KBytes of fast RAM if it is available. A one bit plane (two color) 1008X800 window requires 100.8KBytes of memory, so a four color full size window on the new monitor would require 217.6KBytes of chip RAM just to get started. That is in addition to the chip RAM used by the operating system at boot. Smart refresh windows, graphics applications, multi-tasking, all would put additional system demands on chip RAM.

That wraps up my coverage of the new operating system. I'm off to the Amiga Developers Conference, and I've been told that most of what will be discussed will not be under non-disclosure. I should be able to bring back information on Commodore's announced two new Amigas, additional new products from Commodore, and information on new software and hardware products from third party developers. □

Matthew Leeds has been involved in the high tech field since he blew up his bedroom playing with a children's chemistry kit. He has been using Commodore computers since 1982 and has a strong interest in photography, video, graphics and related fields. He currently works for Infinity Software.

NOW OPEN IN CUPERTINO

(Corner of DeAnza & Rodriques)

COMMODORE AMIGA 2000

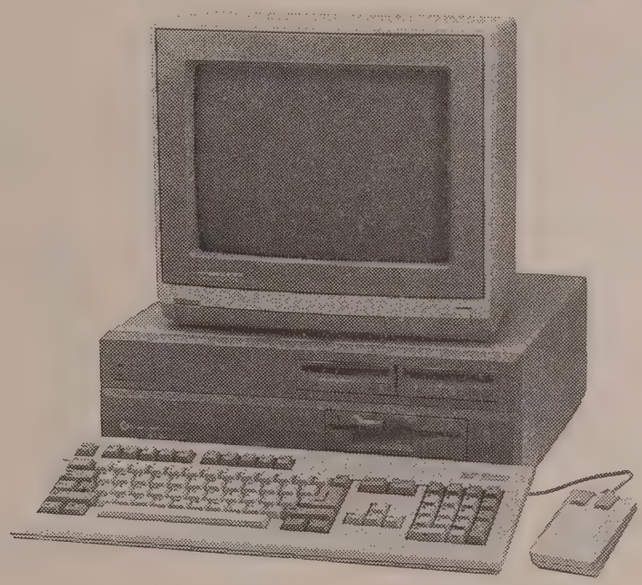
COMMODORE AMIGA Authorized Dealer

Motorola 68000 CPU with built-in disk drive, keyboard, mouse, system software and Basic

Standard 1 MB Ram expandable to 9 MB

Multi-tasking Operating System

4096 available colors with max resolution 640x400 (more with overscan).



Only Amiga Makes It Possible.

Hardware Specials!!

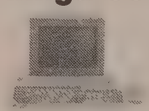
- Micron 2MB RAM Board $399
- StarBoard II for A1000 w/2MB . . Call
- A2000 47MB Hard Card $849
- ProGen Genlock . Call

COMMODORE AMIGA **PERSONAL COMPUTER**

New Software

- 3 Stooges
- Harrier Combat
- Video Effects 3-D
- 3-Demon
- Excellence!

Amiga 500 Special!



$979

A500 with 1MB RAM and Monitor

Amiga, Amiga 1000, and Amiga 2000 are trademarks of Commodore Business Machines, Inc.

"User's Group Members: Call For New Promotion!!"

COMPUTER ATTIC

SAN FRANCISCO
217 Sansome Street
Corp: (415) 398-4543
(415) 398-4541

PALO ALTO
382 University Avenue
(415) 322-0639

CUPERTINO
10251 S. DeAnza
(408) 253-5300

Amiga Available In Palo Alto & Cupertino Only

WordWhat?

Two New Word Processors For The ST

By David Hawkins

You can now get *WordPerfect* for the Atari. Should you? Yes, buy *WordPerfect*. (Did you have something else in mind for your tax rebate check?) *WordPerfect* lists at $395 from WordPerfect Corporation. Check with your local dealer for actual price.

There's another new word processing program called *WordUp*. It's a good program. List price is $79.95 from Neocept, Inc. If price is your main consideration, buy *WordUp*.

If you didn't get a large tax rebate check, you might not want to get both. So how do you choose? These are both good programs, but they do have different strengths.

WordPerfect

If you use a wide variety of computers, then *WordPerfect* is the way to go. There are versions for IBM, Macintosh, Amiga, and Atari. While *WordPerfect* may not push the limits of any of these computers, it does make good use of each. Learn *WordPerfect* and *WordStar* (which you could run on the Atari with either the CP/M emulator or the IBM emulator) and you should be able to perform the same operations on just about any computer.

While WordPerfect may not push the limits of the IBM, Mac, Atari or Amiga, it does make good use of each. Learn WordPerfect and you should be able to perform the same operations on just about any computer.

WordPerfect comes with a spelling checker and a thesaurus. The printer support is also excellent. The 600 page manual covers everything, though you may have to dig around to find a few things. *WordPerfect* comes on six disks, including one for the tutorials.

WordPerfect is not copy-protected, which means you can install it on your hard disk as well as on floppies. It will work on a single drive system. The first month I had it, I used it with just one drive, and was quite happy that such a powerful program didn't require a lot of disk swapping to work. (This was on a ST 1040 with a double sided drive. *WordPerfect* would probably be cramped on a single sided drive.)

What About The Bugs?

Well, *WordPerfect* did have a few bugs when it shipped. But the company's been great at admitting where the problems are and in getting fixes out. One user told me that he's already received three free updates! WordPerfect Corp. is one of the most impressive companies I've run across for program support and customer relations. When you buy a copy, check the date of release; call WordPerfect and ask if this is the most recent version.

So, Why Consider WordUp?

The first time I used *WordUp* it left me breathless. I have eight word processors for the ST, and *WordUp* is going to be the one I use.

The fonts were the first thing I noticed about *WordUp*. Want to see text in a Swiss font onscreen or on the printer? How about Dutch? Typewriter? Want to see what you type in 24 points on the screen? Eight points? Like to see a different font in the footnotes?

And then there's graphics — *WordUp* allows you to incorporate graphics from Degas, Neochrome, or the GEM bit-image format. You can put text around the graphics. *WordUp* is one of those programs that blurs the distinction between word processing and desktop publishing.

WordUp also has needed business features like mail merge. It can take a data file and add that data to a *WordUp* document. It can also do either footnotes or endnotes.

The *WordUp* manual is well written, but the most amazing thing is that it was written with *WordUp* and printed by *WordUp* on an Atari SLM804 Laser Printer! And it looks good. The manual is a good example of *WordUp*'s capabilities.

The Down Side

Much as I like *WordUp*, there are a few flaws. Like *WordPerfect*, it had a few bugs when it shipped. My copy is dated 4/13/88, and there is a newer version that just came out. Upgrades are free; just mail in your program disk.

WordUp does not come with a spelling checker. You can use a program like *Thunder!* from Electronic Arts, though.

WordUp is GEM based. That means a lot of things that won't fit into this article, but it also means that to use a printer with *WordUp* requires a printer driver. *WordUp* comes with just one printer driver — one that works with the Epson FX80. If you have a printer that is compatible with the Epson, then you don't have a problem. If you have a different printer then you need to get a driver from Neocept. The printer driver is important if you want to print graphics.

The biggest problem I had was in changing an ASCII file to a *WordUp* one. I had used another program to strip control characters and formatting codes from the file. But when I called up the file in *WordUp* it was unreadable. I finally realized that the file still contained TAB characters which the strip program had left in there. Unfortunately the TAB character is a formatting code to *WordUp*. I called their technical support and they are working on a fix. (By the way, Mike Fulton, at Neocept's tech support, was very helpful and informative.)

Get WordPerfect if you want to know a program that you can use on a variety of machines. Get WordUp if you want a program that shows what the ST can really do.

Final Word

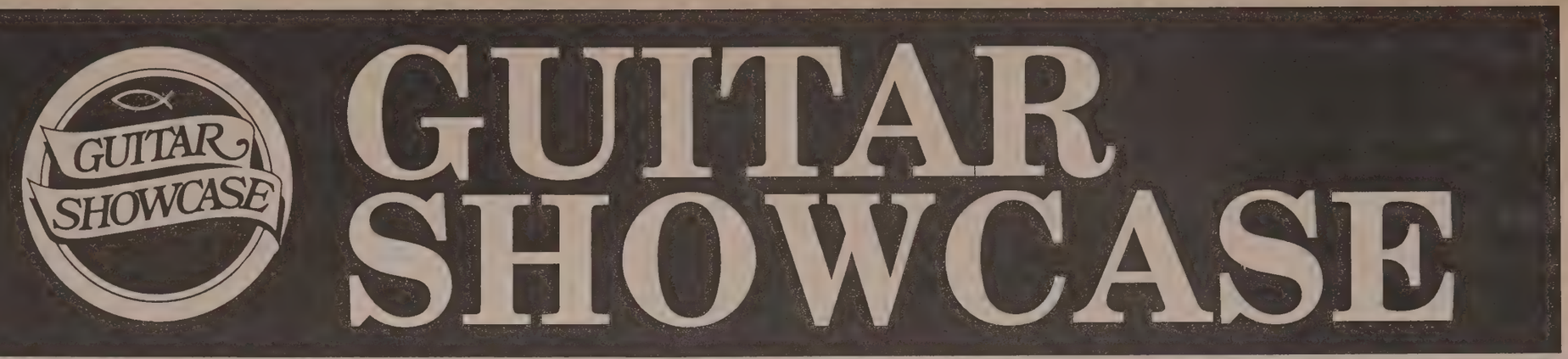
Well, these are two excellent programs. Pick the one that's right for you. Get *WordPerfect* if you want to know a program that you can use on a variety of machines. Get *WordUp* if you want a program that shows what the ST can really do. Both these packages deserve to do well.

Other Notes

I bought a Supra 30 Megabyte hard disk at the West Coast Computer Fair. The show price was $100 off the list price. I've only had it a week, but so far so good. I'm starting to appreciate companies like WordPerfect and Neocept who don't copy protect their software.

A recommendation: support your local dealer. Stop by a store that sells Atari software and ask what they think is hot. There are several stores where the people really know their software. It was a dealer who talked me into trying *WordUp*. I'd heard about it, but didn't realize it would be *that* good. □

David Hawkins is the host of the Atari conference on The WELL (415/332-6106); send email to dhawk. He can also be reached as David Hawkins on the Guild (415/771-7062). He has one of the first Atari ST 1040s sold in San Francisco, both monitors, an Okimate 20 color printer, and disks all over the room.



We Speak MIDI. Do You?
You've Mastered Your Computer ...
Now Enjoy It!

Guitar Showcase's expert staff can help you choose from the Largest Selection of:

Music Software and Hardware, MIDI Accessories, Inboard/Outboard Gear, Keyboards, Controllers, Drum Machines, Sequencers, Multi-Track all-in-one Recorders.

REMEMBER WHEN YOU BUY FROM GUITAR SHOWCASE YOU GET:

Our Exclusive 1 Year Parts & Labor Warranty as well as a Free Loaner if your equipment goes down. We do all Repairs In-House and can turn most around in 48 hours. You have a 3 Day Return Privelege for Full Refund. Guitar Showcase is where you get Real Value!

MIDI MONDAYS • *Always at 7 pm and always Free!*

May 16	***MIDI on the Atari St*** • *Steinberg Pro 24 (new Version)*
May 23	***Sampling on the Roland S-50*** • *A deeper look at sampling*
May 30	***Gone Fishin' and MIDI Boating***
June 6	***MIDI on the Amiga*** • *Music X Sequencer*
June 13	***MIDI on the IBM*** • *Synth editors ... what's available?*

SAN JOSE • 3090 S. Bascom Ave. • 408-377-5864
CAPITOLA • 1360 41st. Ave. • 408-476-4882

USER GROUP NETWORK By Mary Eisenhart

We've received quite a few new listings lately, many accompanied by squawks of outrage from those whose listings were dropped when we began our all-new listings in April. "Why did this happen?" they cry.

Well, to briefly recap what we've been saying since late last year, all our old listings, many of which were obsolete, were dropped and February 1 was the deadline for inclusion in the April issue. New listings will be added each month as they arrive, so those who somehow managed to miss previous messages can still send in new updated listings. Please use the form in this issue, or send us a letter, or email us on The WELL. But please remember, the user group listings are not the proper place for *War and Peace*. Please keep your listing to 15 words, or we will edit it to that length. We also welcome additional information about your group or BBS for inclusion in this column, so please let us know what's going on with your group.

Faithful Correspondent **Loyd Cribbs** did. He's from the **San Francisco Personal Computer Users Group**, and he'd like you to know that the special guest at the May meeting will be none other than **Philippe Kahn**, founder and guiding force of Borland International. The meeting's on May 16 at Fort Mason Center (Room 1, Building A). Software sales and SIG meetings start at 7 pm; the meeting begins at 8.

Having been privileged to witness a few of Kahn's memorable appearances, I heartily urge everyone to check this out. You can call Loyd at (415)751-5219 for further information.

Lynzie Flynn of **Lynzie's Motherboard**, which was one of the very first boards listed in these pages and has had a long and distinguished career in the LA area, sends word that she's added some new phone lines. You can now reach the Motherboard 24 hours a day at five local numbers:(213)650-0519 for West Hollywood, (213)659-1982 for West LA, (818)508-6482 and (818)989-3875 in the San Fernando Valley, and, for the 9600-baud-inclined, (213)650-6172. The board offers matching, chat, a large download library, many public boards, email, and offline social events.

Still with us, despite the hiatus in its listing's appearance, is the **Earth-Rite BBS**, (415)651-9496. Sysop **R.E. McCain** says, "While we are perhaps not in the forefront of of those Bay Area BBSes offering gimmicks such as graphics, sound, and color, we offer a solid forum for those interested in New Age, Eastern, and Pagan philosophies and religions. We have never attempted to be a software exchange; we offer food for the mind rather than grist for the hacker."

Earth-Rite operates 24 hours a day at 300/1200 baud, 8-N-1.

On the back of a chartreuse flyer for **Jonathan Richman and the Modern Lovers** comes a listing for the **Planet Zed BBS** at (213)434-2933. Somewhere in all that chartreuse the sysop seems to have omitted his/her name, but the board is a music oriented BBS for all computer types, with IBM compatible downloads. It offers several conferences, including record reviews and coming events. It operates 24 hours a day at 300/1200/2400 baud, 8-N-1.

If you happen to be an owner of **Televideo** or **Timex/Sinclair** equipment, you'll be glad to hear about the **Grey Matter BBS**, which offers support for both product lines. Sysop **Ed Grey** invites your calls at (213)971-6260, 300/1200/2400, 24 hours.

Also on the support front, **Everex Systems Inc.** has created its own BBS to help programmers write software to take advantage of its graphics features updates of drivers, games, source code, and more; it's open to all. **Gary Lorensen** of Everex, who tells us all this, invites you to call the board any time: (415)683-2924, 8-N-1, 300/1200/2400.

The more conversationally-minded might want to call **The Digital Dungeon** in Santa Barbara. Sysops Jerry Ash and Doug Sanders say "This is an open system, designed to be an open forum for topics such as IBM, Macintosh, protocol, current events, the presidential race, Central America, Creative, and more. There are unique downloads, but this is primarily a conversation system." It, too, operates 24 hours a day at (805)683-2436.

Glenn Della-Monica invites users of **DataEase** database software to attend a meeting of the **DataEase Users Group**, which meets every two months on the third Wednesday. The next meeting is May 18 at Turing Auditorium on the Stanford University campus, 1:30 pm. Alternate meetings are held in San Francisco. If you'd like more information, call **Kermit Carter** at (415)945-7817.

AI enthusiasts, **Kent Byron**'s got good news for you. **The Artificial Intelligence Special Interest Group** is a nationally recognized group studying and developing AI and artificial neural networks. Meetings are on the campus of the University of Santa Clara campus (which, as a graduate of that fine establishment, I can commend as a great place, especially in the springtime. . .), usually on second Thursdays in Engineering 101. There's also a newsletter, and if you call Ken at (408)244-8739, he'll pass along any other information you might need.

Joe Mahoney, president of the **Bay Area AT&T PC Users Group**, sends us word that there are now two monthly meetings, one in the North Bay and one in the South Bay. The North Bay group meets on the first Wednesday of the month at alternating sites in Oakland and San Francisco; call Joe at (415)586-8376 for information, or call the Easy Access BBS at (415)829-6027. South Bay AT&T users might prefer the meetings which take place on second Wednesdays at the AT&T Building, 1090 E. Duane in Sunnyvale. Both meetings are at 6:30 pm.

Dr. C. J. Wallia of the **Bay Area Desktop Publishing Users' Group** invites you to attend one of the group's meetings, which take place Tuesday evenings from 6 to 8 pm at Norman's Restaurant, 3204 College Ave., Berkeley (corner of College and Alcatraz). For further information call (415)848-8200.

And on that cheerful note, I'll close for another month. Keep that mail coming—send the US variety to User Group Network, 5951 Canning Street, Oakland, CA 94609, and email to **microx** on The WELL, (415) 332-6106.

BULLETIN BOARDS

INTERNATIONAL

FidoNet Argentina (054). (011) 541-22-419. 8-N-1 3 PM-11 AM PST. The 1st fido node in Argentina has over 450 subscribers. Specializes in issues from S.A. PD software library to d-load. Sysop: Pable Kleinman

Cassia Express. (065) 344-9163. 300/1200/2400 24 hrs. Singapore. Sysop: N.M.Rahman

Remote Bulletin Board (Singapore). (065) 445-1646. 9600/2400/1200 24 hrs. 218 MB Online (IBM upload/download). Sysop: Umar A. Rahman

Terrapin Station. (203) 656-0134. Grateful Dead Board. Sysop: Klaus and Gretchen Bender.

209

Bertha Board. (209) 239-9853. 300/1200/2400 8-N-1 24 hrs. MS-DOS, others. Some emphasis on programming. Up- & downloads. Free. Registration required. Sysop: Kenneth Roach

Silicon Realms. (209) 754-5530. 300/(1200 Soon) 9:30AM to 6:30AM.Formerly Motherload 64. Commodore, PET & Plus/4. Programmers board, Continuing & Short Story boards, FRPG. Sysop: Joe Commodore

213

Ashton-Tate Support. (213) 538-6196. Free technical support, answers to questions about Ashton-Tate software products.

Carrier Point Information. (213) 423-4999. 1200/2400 8-N-1 All but 1:30-3:30 PM. TBBS multi-user system. Operating 10 lines, 9 in rotation. All lines support 300/1200/2400 baud rates.

Chat Line. (213) 534-4311. Multi-line, Multi-user interactive group & private forums. Downloads, Database.

Dial-Your-Match. (213) 539-2448. Lomita.

Dial-Your-Match. (213) 633-4349. Downey.

Dial-Your-Match. (213) 461-9899. Hollywood.

Dial-Your-Match. (213) 467-6776. Hollywood.

Dial-Your-Match. (213) 558-4336. Culver City.

David's Amazing BBS. (213) 459-5891. Conferencing (like the Well, but easier to use). Electronic bar; talk; matchmaking; 5 lines; unique software. Sysop: David Dennis

ICN. (213) 204-0646. 2400/1200/300 24 hrs. The place to buy/sell/trade collectibles (stamps, books, etc.)

Information Symposium. (213) 258-5086. 300/1200/2400 8-N-1 24 hrs. Serving the Info. Professional, Tech. Info, M.I.S. Employment. MS-DOS; OS/2; graphics. Password req'd for access is "Micro." Sysop: William Bloomer

Lynzie's Motherboard. (213) 650-0519. 300/1200/2400 8-N-1 24 hrs. Multiinterest. Social events for users. If you're looking for a discriminating BBS, this is the place to be. Sysop: Lynzie Flynn

Oil Patch PC Board. (213) 427-5980. 300/1200 8-N-1 Eves. only. Exclusively C. Libraries; utilities; source code; tutorials. Sysop: Rick Shoop

Southland News. (213) 402-4079. 24 hrs. An online newsmagazine w/ general news, comments, entertainment, computer news show, club & swap meet listings.

The Great American Audio/Video Board. (213) 469-6542. 300/1200 8-N-1 Eves. Reviews, essays, buyers guide, instruction. Sysop: Keith Bass

Westside. (213) 933-4050. 3/12/2400 8-N-1 24 hrs. 17 lines w/chat, library, matching. Public & E-mail.

Beaver Creek. (213) 437-1410. 8-N-1 All but 4-9 PM. Sysop: John Campbell

Time-X-Change. (213) 329-3922. 300/1200 8-N-1 24 hrs. Timex-Sinclair & CP/M users Free Sysop: Dave Clifford

Electronic Media Network. (216) 241-2612. 1200 8-N-1 23 hrs. Provides link between employers and high-tech, highly skilled professionals.

Planet Zed. (213) 434-2933. 300/1200/2400 8-N-1 24 hrs. Music oriented, for all computer types. Record reviews, coming events. Nice graphics.

Grey Matter BSS & RCP/M. (213) 971-6260. 300/1200/2400 24 hrs. Televideo and Timex/Sinclair support. Sysop: Ed Grey

Lynzie's Motherboard. (213) 650-0519. 300/1200/2400/9600 8-N-1 24 hrs. Matching, group and private chat system, local social events. W. Hollywood. Sysop: Lynzie Flynn

Lynzie's Motherboard. (213) 659-1982. 300/1200/2400/9600 8-N-1 24 hrs. Matching, group and private chat system, local social events.West L.A. Sysop: Lynzie Flynn

Lynzie's Motherboard. (213) 650-6172. 300/1200/2400/9600 8-N-1 24 hrs. Matching, group and private chat system, local social events. Sysop: Lynzie Flynn

The Alternative BBS. (213) 439-7044. Programmer and user forums. UP/DL. Serious PC enthusiasts or professionals only please.

The Midnight Express. (213) 874-1022. 300/1200 24 Hrs. Unlimited E-Mail, Land of SPUR. Modifies GBBS Pro System.Games, stock exchange, quizzes and surveys. Sysop: Justin Case

MICROWORLD

1514 UNIVERSITY AVENUE, BERKELEY, AT SACRAMENTO ST.

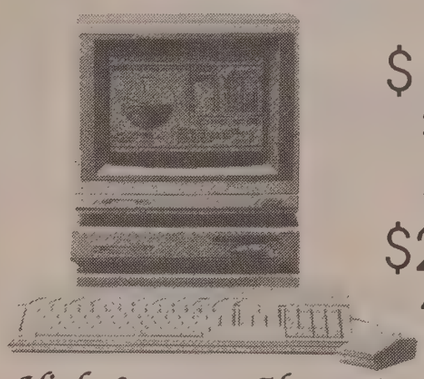
featuring AMERICA'S MOST POWERFUL stock microcomputer!

ATARI®

Power Without the Price™

the MEGA 4

- 4 megs real RAM
- Runs all ST software
- Can run IBM, CPM, and MAC software
- Digitizes 300 dpi 8x11w/Canon IX-12
- Free Software and training + low prices
- Best DESKTOP PUBLISHING SYSTEM *ANYWHERE ! ! !*



$1695
2 MEG
plus
freebies

$2395
4 MEG
plus
freebies

High Support Always!

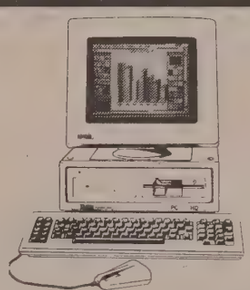
845-2000

So, do you still think ATARI just makes game machines? When interviewed about PS2 and the MAC2 in Microtimes, John Dvorak answered that if he were a new user he'd buy an ATARI ST !!
Why? It's friendlier, cheaper, and does it all!
This is your best POWERFUL CHOICE for a standalone system!

and featuring the WORLD"S BEST EGA MSDOS value!

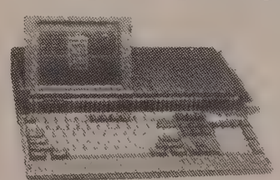
- EGA, CGA, MEGA, and Herc. Mono
- 640 x 352 resolution
- 8086 runs 2.5 x XT
- MSDOS 3.2, GEM, Ability Plus, Mouse, Clock, and 3 slots plus GEM PAINT
- Serial & Parallel
- Excellent for home or office/network
- You'll hate CGA after you see this!
- EUROPE's BEST SELLING MACHINE
- Amazingly low price

AMSTRAD



$929

PC1640



$999

PPC 640

845-2000

AND IF YOU NEED A Portable, the PPC 640 outfeatures anything under $2000!

- 640k ram, 3.3 MSDOS
- LCD supertwist CRT
- 2400 baud modem
- Mirror II included
- PC Organizer
- FULL SIZED KEYBOARD
- Works with monitor
- 1 or 2 3.5 drives
- 8086 chip @2.5 XT
- 11.8lbs serial/parallel
- Carrying Case
- Fully compatible!

The Spotlight on California Computer News - MicroTimes

408

Bay Area Atari. (408) 249-7722. 300/1200 24 hrs.

Bay Area BBS. (408) 723-7238. 300/1200/2400 Several "live" doors including adult & X-rated. Sysop: Jim Acker

Byte Bandits of America. (408) 374-3974. 300/1200 24 hrs. Free. MS-DOS Sysop: Sam C. Brown

BYTE Bandits of America - TRS 80's. (408) 374-5139. 2 monthly meetings in Campbell, CA

Campbell Chapter of 64/More Commodore. (408) 946-6154.

Computer Pages. (408) 247-5500. 300/1200 24 hrs. Multi-line FREE! First on-line shopping guide and directory in Silicon Valley. Sysop: Computer Pages

Computer Tech. (408) 946-3559. 1200/2400. BBS for computer groups. File transfers. All free.

Cupertino Chapter of 64/More Commodore. (408) 946-6154.

Dial-Your-Match #296. (408) 720-0724. 300 8-N-1 24 hours Sunnyvale. Matching and e-mail.5 boards. Verification required. No fees.

Digit Mailbox. (408) 946-6154. 3-9600 24 hrs. All welcome. Amiga run. Official 64/MORE BBS.

Matchmaker San Jose. (408) 248-5755. 300/1200 24 hrs. The ultimate pen pal system. Make a date, meet a friend, have the time of your life. Type "mm" at login. 300 plus calls/day. Sysop: The Matchmaker

Non-Smokers BBS. (408) 298-4277. 300/1200/2400 8-N-1 24 hrs. Restaurant/hotel guide. Health information.

North Valley Chapter of 64/More Commodore. (408) 946-6154.

Pacific Exchange Multi-line. (408) 946-8561. 1200/2400. Large IBM file selection, conferences, multi-node chat.

PC-Shareware. (408) 270-4084. 1200/2400 8-N-1 24 hrs. Registration required. Dedicated to shareware for IBM PC. Over 50 megs of most popular & latest available. Sysop: Bob Allen

Public Domain Software Special Interest Group (PDS-SIG). (408) 270-4085. 1200/2400 8-N-1 24 hrs. One of largest selections of PD & shareware PC software.Over 250 megs. of files. Registration required. 64 directories.

San Jose Chapter of 64/More Commodore. (408) 946-6154.

Silicon Valley FOG. (408) 738-1071. 300/1200/2400 8-N-1. Message system & 42 Megs of CP/M & MS-DOS files. Sysop: Bob O'Connor

ST Hotline. (408) 244-2493. 9600 24 hrs. Atari ST only. 110 Meg hard disk.

Stock Market. (408) 733-9341. 300/1200 8-N-1 24 hrs. Provides precise, reliable price forecasts for 6000 NYSE, AMEX & OTC (NMS) stocks. Multi-line, multi-user system.

S-100. (408) 262-5150. 300/1200/2400 8-N-1. CP/M & MS-DOS libraries.

The Dungeon. (408) 992-0846. 300/1200 8-N-1 24 hrs. All adult, registration required. Sysop: Sir Dep

The Guild. (408) 988-4004. 300/1200/2400 24 hrs. 160 MB online. Hardware SIG's, BBS info, Professional Certification Testing. Sysop: Nat'l BBS Soc. Staff

Timex/Sinclair BBS of Silicon Valley. (408) 735-7390. 300/1200 8-N-1 24 hrs.

Towards 2000!!. (408) 773-9759. 300/1200 8-N-1 24 hrs. IBM oriented. No Fee. Message base. Sysop: Keith Proctor/Chris III

Stop eyestrain, backstrain, & tension with Ergonomic Computer Products!

Call for a FREE catalog & OCLI Glare/Guard filter trial

Stressed out by your computer?

- Glare static radiation filters
- Adjustable computer furniture
- Printer sound covers
- 1000's of accessories & supplies that can help you reduce stress and increase office efficiency

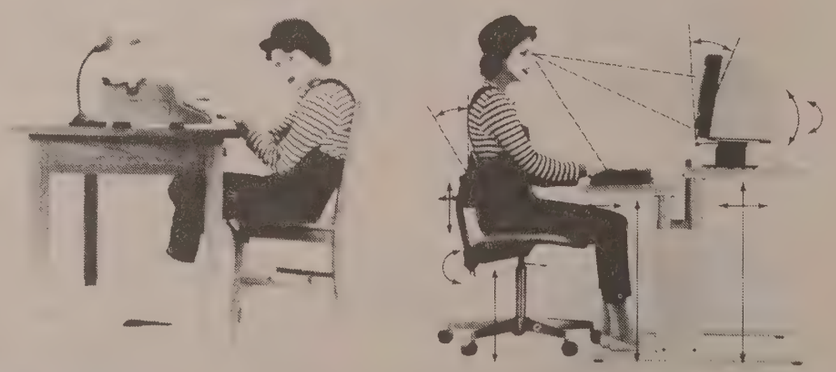
ERGONOMIC COMPUTER PRODUCTS

"People Products For The Computer"

San Francisco, CA **415-673-5757**

ERGONOMICS:

A VITAL TOOL FOR INCREASED PRODUCTIVITY IN THE COMPUTER WORKPLACE.



Although the term is relatively new, the concept has existed almost forever.

By definition, ergonomics pertains to the relationship between man and machine. In a broader sense it deals with the everyday adjustments that are made to improve the work environment, making it more pleasant and productive for human beings.

Studies show that dramatic improvements in working performance can be achieved by the use of ergonomically designed furnishings.

Come visit our showroom featuring a wide selection of ergonomically designed desks, chairs and accessories.

COMPUTER FURNITURE

1313 El Camino Real, Belmont, CA 94002 (415) 592-7584

C · O · M · P · A · N · Y

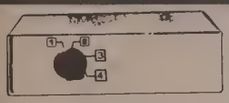
OPEN MON-FRI 10-5; SAT 12-5

LARGE BUYERS & SMALL BUYERS SAVE MONEY AT EAGLE

COMPUTER PARTS, HARDWARE & CABLE

(818) 244-3191
(213) 245-2338
or 1-800-992-3191

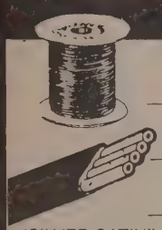
Computer Data Switches



HIGH QUALITY ROTARY SWITCHES. ALL PINS ARE SWITCHED.

	1-9	10-UP
• 25 Pin DB-AB (1-2)	$29.95	$22.95
• 25 Pin DB -ABCD (1-4)	$39.95	$32.95
• 36 Pin Centronics-AB (1-2)	$39.95	$29.95
• BNC	$39.95	$29.95
• TWINAX	$69.95	$59.95

FLAT MODULAR CABLE



"SILVER SATIN" GREY

	4 CONDUCTOR	6 CONDUCTOR	8 CONDUCTOR
1000 FT	31.00/M	52.50/M	68.20/M
5000 FT	25.50/M	43.00/M	56.00/M
10,000 FT	22.50/M	38.50/M	49.75/M

MODULAR CONNECTORS

	4 COND	6 COND	8 COND
10 pc	2.95	3.95	4.95
50 pc	10.95	12.95	14.95
100 pc	19.95	22.95	24.95
1000 pc	115.00	135.00	169.00

MODULAR CRIMPING TOOLS

STEEL BODY WITH SOFT PLASTIC GRIPS

4 or 6 COND. 12.95
8 COND. 19.95

RS-232 to Modular Plug Adapters

Allows use of 4-6-8 conductor telephone wire for interconnection or RS-232 devices

Using telephone cable between computers and various peripherals speeds up installation, moving equipment becomes simple with snap in/snap out connectors.

EAGLE NO.	DESCRIPTION
25M-8 ..... DB-25	Male to 8 Pin RJ Jack
25F-8 ..... DB-25	Female to 8 Pin RJ Jack
25M-6 ..... DB-25	Male to 6 Pin RJ Jack
25F-6 ..... DB-25	Female to 6 Pin RJ Jack
15M-8 ..... DB-15	Male to 8 Pin RJ Jack
15F-8 ..... DB-15	Female to 8 Pin RJ Jack
15M-6 ..... DB-15	Male to 6 Pin RJ Jack
15F-6 ..... DB-15	Female to 6 Pin RJ Jack
9M-8 ..... DB-9	Male to 8 Pin RJ Jack
9F-8 ..... DB-9	Female to 8 Pin RJ Jack
9M-6 ..... DB-9	Male to 6 Pin RJ Jack
9F-6 ..... DB-9	Female to 6 Pin RJ Jack

1-9 ..... $3.95
10-49 ..... $3.75
50-99 ..... $3.25
100 up $2.95

MODULAR WALL PLATES

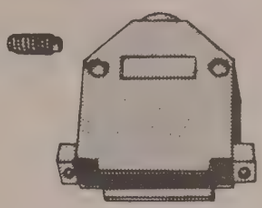
SINGLE

DOUBLE

	4 CONDUCTOR		6 CONDUCTOR		8 CONDUCTOR	
	SINGLE	DOUBLE	SINGLE	DOUBLE	SINGLE	DOUBLE
1-24	2.49 ea	3.69 ea	3.69 ea	4.29 ea	4.95 ea	7.95 ea
25-99	1.80 ea	2.49 ea	2.69 ea	3.29 ea	3.75 ea	5.50 ea
100 +	1.20 ea	1.60 ea	1.80 ea	2.19 ea	2.50 ea	3.80 ea

D-SUB MINIATURE HOODS

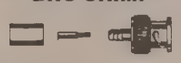
SPECIAL PRICING



PLASTIC HOODS
Includes Mounting Hardware & Set Screw To Hold Cable
9 PIN .....#DE 9HS
25 PIN ....#D825HS

$25.00 PER 100

BNC CONNECTORS & ADAPTORS

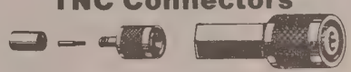


BNC CRIMP		BNC TWIST-ON		BNC SPLICE		BNC "T"	
	#30		#31		#35		#41
10-49	69 ea	10-49	1.10 ea	10-49	1.09 ea	10-49	2.30 ea
50-99	64 ea	50-99	99 ea	50-99	99 ea	50-99	2.12 ea
100-999	59 ea	100-999	90 ea	100-999	94 ea	100-999	1.95 ea
	79¢ each		1.69 each		1.19 each		2.69 each

Twin-ax Connectors

10-49	2.90 ea.	10-49	3.69 ea.
50-99	2.65 ea.	50-99	3.35 ea.
100-999	2.45 ea.	100-999	3.09 ea.
	3.29 each		3.99 each

TNC Connectors



10-49	1.74 ea	10-49	1.55 ea
50-99	1.58 ea	50-99	1.42 ea
100-999	1.41 ea	100-999	1.32 ea
	1.99 each		1.69 each

We have one of the largest selections of connector supplies on the west coast

D-Sub-Miniature Connectors (Shells)

Industry standard connectors for data cables - computer systems - peripherals. Connectors feature insertable pin and socket contacts that are easy to insert or remove.

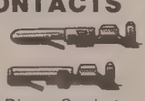
	1-9pcs	10-24pcs	25-49pcs	50-99pcs	100-999pcs
DB-9 Plug	.72	.55	.50	.40	.34
DB-9 Socket	.72	.55	.50	.40	.34
DB-15 Plug	.76	.59	.54	.44	.38
DB-15 Socket	.76	.59	.54	.44	.38
DB-25 Plug	.78	.61	.56	.46	.40
DB-25 Socket	.78	.61	.56	.46	.40

INSERTION/EXTRACTION TOOL

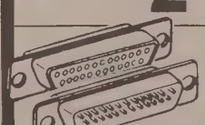
Pin & Socket Contact
$2.95

CRIMP TYPE CONTACTS

Gold plated contacts are crimped to wire using a hand crimp tool.
$7.00/$100
$55.00/$1000



Pin or Socket (male or female)



Fixed Contact Solder Cup D-Sub-Miniature Connectors

Industry standard connectors for: data cables, computer systems - peripherals.

	1-9pcs	10-24pcs	25-49pcs	50-99pcs	100-999pcs
DB-9P Plug	.69	.49	.39	.35	.32
DB-9S Socket	.72	.54	.42	.39	.35
DB-15P Plug	.85	.65	.51	.47	.43
DB-15S Socket	.97	.77	.60	.55	.50
DB-25P Plug	.97	.77	.60	.55	.44
DB-25S Socket	.97	.77	.60	55	.44

EAGLE ELECTRONICS

NEED LARGER QUANTITIES? CALL FOR A COMMERICAL QUOTE

ESTABLISHED 1963
1233 E. COLORADO BLVD., GLENDALE, CA 91205
(818) 244-3191 1-800-992-3191 (California) (213) 245-2338 Fax No. (818) 244-0466

DISCOVER CALIFORNIA'S

COMPUTER SERVICE PROFESSIONALS

- IN HOUSE AND FIELD TECHNICAL SPECIALISTS
- VARIED MIX AND MATCH SERVICE PLANS
- STATEWIDE SERVICE AREA
- DEALER PROGRAMS
- TECHNICAL PHONE SUPPORT

Micro Computers • Laserjet Printers • Dot Matrix and Daisy Wheel Printers • Local Area Network • Video Display and Graphic Terminals • Line Printers

JOIN THE 100's OF SATISFIED CUSTOMERS TODAY!

ATS

AUTHORIZED TECHNICAL SERVICES

477 Roland Way, Oakland, CA 94621

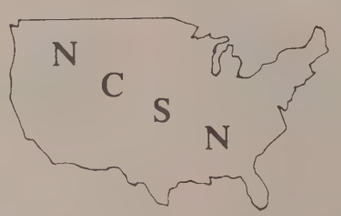
OAKLAND (415) 638-4449

SACRAMENTO (916) 923-2944

ORANGE COUNTY (714) 937-0332

LOS ANGELES (213) 568-8862

SAN JOSE (408) 970-9860



MEMBER OF
NATIONAL COMPUTER SERVICE NETWORK

1-800-451-4057

TRS-80. (408) 374-5139. 300/1200 24 hrs. Tandy. Free. Sysop: Sam C. Brown

Gavilan User Group. (408) 374-5140. 300/1200. Portables. Free. Sysop: Sam C. Brown

Hotel California. (408) 942-1081. 300/1200 8-N-1 24 hrs. Commodore, Punter D/L. Sysop: Big Foot

LDW Line. (408) 435-1929. 300/1200 8-N-1 8 PM-9 AM. Official BBS of LDW, Inc. features new prod. bulletins, LDW BASIC programer's support, ul/dl, & free spreadsheet for eval. Sysop: Bogdan Blaszczak

PDS-SIG. (408) 270-4085. 2400 8-N-1. Largest selection anywhere of pub. domain & shareware software.

SBUG-BBS. (408) 249-8259. 1200 8-N-1 24 hrs. Membership in SBUG (or registration fee req'd.) Sysop: Jim Gonsalves

The Student's Board. (408) 629-9678. 300/1200 8-N-1 7:30 to 10:30.

PD files, Conference, SIG, All welcome, even if you're not a student. Sysop: Gary Dennis

Topaz BBS. (408) 263-0317. 300/1200/2400 8-N-1 24 hrs. Literature, poetry and personals. Free. Suggestions welcomed. Sysop: Brenda Tyler

Shrink Tank BBS. (408) 257-0323. 300/1200 24 Hrs. Psychological theme. All users welcome. Mental health and other professional are encouraged to call. Free. Sysop: Dr, Skip Bischoff

Teleplay. (408) 262-4488. 300 A computer gaming club. Multi-user, interactive, fantasy roleplaying. Also: (408) 293-4970. Voice: (408) 262-4942

Hot City. (408) 758-8334. Commodore with CBM color/graphics. Salinas.

Amiga Exchange. (408) 375-1823. Amiga, Commodore. Runs Opus.

AMME jr. (408) 899-1219. Commodore. CBM color/graphics.

Apple SMUG. (408) 384-0148. Apple.

Beo's Club 21. (408) 899-5169. Fun board, all welcome.

The Exchange. (408) 659-3078. Geneology mainly. Also IBM.

Hacker's Heaven. (408) 375-5455. Sponsored by Pro-Log Corp. Supports STD-Bus, MS-DOS, CP/M.

Jumpin. (408) 394-8842. Operated by Monterey Area PC-jr. Users Group.

User's Port. (408) 394-3917. Commodore with CBM color/graphics. Runs C-Net.

415

ABACUS - Atari Bay Area Computer Users Society. (415) 587-8062. 300/1200 24 hrs. Free messages and downloads for 8-bit & ST users. Sysop: Ed Van Pelt

AIDS BBS. (415) 626-1246. 300/1200 24 hrs. Free. All welcome. Mail send/receive on AIDS: please not on other subjs. due to time & access limitations. Library. Sysop: Ben Gardiner

Amiga Addicts Anonymous (AAA). (415) 222-9416. 300/1200 24 hrs. Amiga Chat & Pub. Dom. files. Sysop: Randy Spencer

AUGment - Amiga Users Group of Silicon Valley. (415) 659-9169.

Back Door. (415) 756-6238. 300/1200/2400 8-N-1 24 hrs. Alternative lifestyles information. IBM clone library. Voice validation required for access.

Bay Area's Luv Connection. (415) 387-0529. 8-N-1. Multiline private chat, matchmaking, E-mail, SIG's & numerous pub. boards.

Boot to the Head. (415) 352-5411. 300/1200 8-N-1 24 hrs. Multiplayer games only. Pyroto, Tradewars Taskforce & more.

Catholic Information Network - Santa Clara County. (415) 967-3420. 300/1200 8-N-1 6 PM-8 AM. PC pursuitable through (408) through Santa Clara BBS. No access charge. People of all faiths welcome.

Catholic Information Network - SF. (415) 387-3251. 300/1200 8-N-1 24 hrs. PC pursuitable. Active conferences. Simple registration, no access charge. People of all faiths welcome.

Charisma. (415) 349-6576. 1200/2400 8-N-1 24 hrs. Paradox, dbase, IBM utics. 3500 files. Sysop: Tom Swegles

Commodore Connection. (415) 458-1005.

Dial-Your-Match. (415) 964-3255. Mountain View.

Dial-Your-Match. (415) 991-4000. Daly City.

Dial-Your-Match, #341. (415) 537-0666. 300/1200 24 hrs. Nationally networked, meet the 250 callers in the date-a-base. Sysop: Matchmaker 2

Dr. Don's. (415) 885-1973. 1200/2400 24 hrs. Discussion; ComputerTalk; BMW-CarTalk; SportsTalk; BoardRoom. Sysops: Dr. Don, Bimmer Pilot

Epson Users of SF Bay Area. (415) 467-2780.

Family Radio Forum - Oakland. (415) 562-5483. 300/1200/2400 8-N-1 24 hrs. Download pub. software & entire bible texts. Echo conferences on parenting, teens, singles, etc. Christian BBS for all. Sysop: Richard Yim

Family Radio Forum - Sacramento. (415) 562-5483. 300/1200/2400 8-N-1 24 hrs. Download pub. software & entire bible texts. Echo conferences on parenting, teens, singles, etc. Christian BBS for all. Sysop: Richard Yim

Family Radio Forum - San Jose.(415) 562-5483. 300/1200/2400 8-N-1 24 hrs. Download pub. software & entire bible texts. Echo conferences on parenting, teens, singles, etc. Christian BBS for all. Sysop: Richard Yim

File Exchange. (415) 647-0505. 300/1200 8-N-1 24 hrs. MAC-based, mostly MAC but other types of computers welcome. Discuss problems & tips related to various programs.

Fremont Area Remote Terminal. (415) 791-2961. 300/1200/2400 24 hrs. MS-DOS & color computer downloads. Free!

Guideboard. (415) 864-3858. 300/1200/2400 24 hrs. Cabbie's Guide to SF. Where to go for restaurants, doctors, auto repair, etc. Resident Astrologer: Swami Tommy. Sysop: Dick Schwartz

Henari. (415) 855-9548. 300/1200/2400 BBS serving the Bay Area Jewish Community, linked to Israel via FidoNet.

MacCircles. (415) 484-4412. 2400 8-N-1 24 hrs. Files; support; congenial conversation. Sysop: Patricia O'Connor

MailCom. (415) 855-9548. Silicon Valley's 1st Mac BBS on FidoNet. Part of EchoMac & BayMac Network. 90 megs, FidoNet/USENET connections.

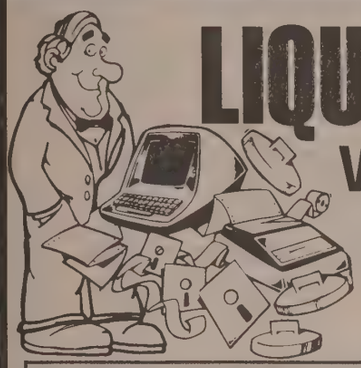
Med-Link. (415) 845-8649. 300/1200/2400 8-N-1 24 hrs. Medical, health, computer topics.

Model 100, 102, & 200 Support. (415) 939-1246. 300/1200 8-N-1 24 hrs. Ongoing support for Tandy/Radio Shack Model 100, 102 & 200 owners. Int's support by mail, voice, & BBS.

Mouse-Trap. (415) 969-5486. 300/1200/2400. MS-DOS; files; messages; online games.

Computer Surplus Store

715 Sycamore Drive • Milpitas, CA 95035 • 408-434-0168 • FAX 408-434-0931



LIQUIDATION PRICES EVERYDAY

Visit the Largest Surplus Store in the Valley.

HUGE

Terminal and Monitor Sale "REFURBS"

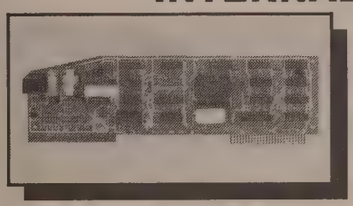
Quantity and Pricing Varies

TERMINALS

- Adds Reget 100 .....$ Call
- DEC VT52 .....$65
- Intercolor ANSI (Color) ...$199
- Lear Siegler ADM 5 .....$89
- Lear Siegler ADM 3,A $65
- TeleVideo 925 .....$179
- Qume QVT108 .....$189
- Qume QVT109 .....$199
- Zentec 1021A $99

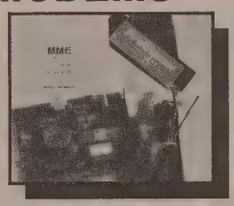
- Hard Disk Controllers
- Hard Disk Drives
- Floppy Disk Drives
- Mainframes
- Software
- Printers
- Power Supplies
- Terminals
- Monitors
- Hardware
- Magnetic Media
- Equipment
- Clone Boards
- Mechanical Gizmos
- Weird Stuff
- Thousands of Items to Choose From

INTERNAL MODEMS



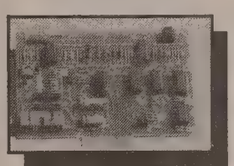
- Apple II, II+, Hayes Compatible
- Manual Included

$19.95



- IBM
- 300/1200/2400 Baud
- Software/Manual Inc.

$124.95



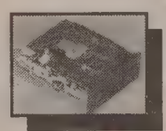
APPLE DRIVE ANALOG BOARD

By Franklin Computers for Apple II, IIe, II+ Floppy Disks.

*Converts a Shugart 390, 400 to an Apple Drive.

$9.95

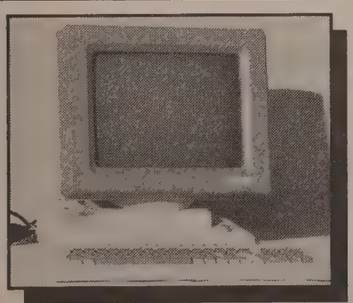
NEC FD1035 3½" Floppy Drive



for IBM, Amiga, and Atari

- DSDD
- 360K or 720K
- No 5¼" Mounts

$89

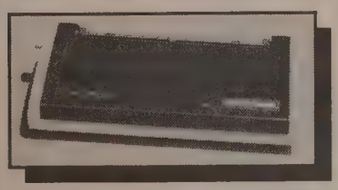


LIMITED QUANTITY

Qume QVT311GX Terminals

- Emulates DEC VT125, Tektronix 4010/4014

Special Price ~~$1995~~ **$450**



PRINTER $189

ALPHACOM ALPHAPRO 101

- Apple II, II+, IIe, or IBM Interface Included
- Excellent Letter Quality
- Diablo and QUME Print Wheel and Ribbon Comp.

Computer Surplus Store

STORE HOURS
9:00–5:30
Monday–Saturday

715 Sycamore Drive
Milpitas, CA 95035
408-434-0168

Grand Opening Specials

DATAWEST
IS
FULL OF GREAT
SURPRISES!

HP Laser Jet II
with
toner cartridge
$1599.00

Apple
Macintosh SE
$1945.00

HP DeskJet
Printer
$699.00

Mylex 386
Complete
System
$2265.00

Super Cartridge
for HP Laser
55 FONTS
$695.00

Some of the products that we carry...
AST, ALLOY, ACER, NEC, TOSHIBA, EVEREX, IBM, COMPAQ, APPLE, WYSE, EPSON, OKIDATA and others.
Plus a complete line of Hardware and Software for Apple & IBM

Networking
Installation
Training
Consulting
Customization
Delivery/Pickup
and Repairs

DATAWEST COMPUTERS
Tel: 415-490-6494
Fax: 415-659-1575
Hours: Monday-Friday
8:30-5:00

Nightengale. (415) 731-2422. 300/1200. A nursing BBS open to all. XT/PC clone MS-DOS.

Open Campus. (415) 895-0135. 300/1200/2400 24 hrs. GBBS/CMS sys. op. by San Leandro HS/Apple Eaters UG. 30 MB, 34 message bases; CMS intersys. E-mail. Library, downloads. Sysop: Robert Shayler

POPnet Berkeley. (415) 527-4510. Multi-line fun & games for all. Not free but cheap.

POPnet San Ramon. (415) 830-1191. Multi-line fun & games for all. Not free but cheap.

POPnet Walnut Creek. (415) 932-4263. Multi-line fun & games for all. Not free but cheap.

Program/Land. (415) 327-6197. 300/1200/2400 24 hrs. Pub. domain BBS - supports all telecommunication protocols. Alt. BBS - (415) 327-6198. Sysop: James Arnold

SF Robotics Society. (415) 752-7228. 300 24 hrs. Extensive robotics & hardware bibliography. Calendar of events.

SFPCjr. (415) 997-4874. 1200 8-N-1 24 hrs. Sysop: Larry Buoncristiani

SFPCUG. (415) 621-2609. 1200/2400 8-N-1 24 hrs. Emphasis on IBM & compatibles. Message board & info exchange. Dozens of downloadable files. Sysop: Richard Couture

SNLNDRO. (415) 895-1785. 300/1200 N. Cal HUB for CMS School Network. Op. by San Leandro HS for CUE & educators. 5MB. Sysop: Robert Shayler

Telenaut DIBBS. (415) 388-4007. 1200/2400 8-N-1. The Graphics Meeting Place where professionals from graphic arts, publishing & computer graphics meet. MS-DOS software.

The Apocryphal Code. (415) 347-2618. 300/1200 8-N-1 24 hrs. Sysop: Dave Brody

The DogLab. (415) 594-9806. 2400 24 hrs. Large file library; several echomail conferences.

The Flea Clinic. (415) 592-4060. 2400 24 hrs. Large file library; several echomail conferences.

The Pilgrim. (415) 731-2422. 300/1200. Spirituality, Catholic nursing. Spiritual development for homosexuals from a Catholic perspective. Oriented to UCSF.

The Switch. (415) 578-1919. 300 24 hrs. Free online entertainment, brought to you by Interactive Productions.

The Wasteland. (415) 479-4520. 300/1200. Debate, discuss & intellectualize. Private mail, computer SIG's. Friendly Sysop.

T-Room. (415) 756-6235. 300/1200/2400 8-N-1 24 hrs. Alternative lifestyles information & fun. Macintosh library. Voice validation required for access.

Video Vision - The Graphic Library. (415) 366-6409. 300/1200/2400/9600 8-N-1 24 hrs. A color BBS mainly for graphics, arts & games. User must read bulletin 1 or download "POLICY.TXT" and FILELIST.ARC". Sysop: Roel Sarceno

Wetware Diversions. (415) 753-5265. 300/1200/2400 24 hrs. Multi-line, UNIX based system for conferencing & gaming. Running PicoSpan. Sysop: Christopher

YET ANOTHER BULLETIN BOARD!. (415) 689-8952. For IBM's & TRS-80's. Novices welcome! Sysops: Jim & Alex Stewart

CIRACS Network. (415) 463-2185. 300/1200 24 hrs. SIG to human service providers working in youth,

SATURDAY, JUNE 4

COMPUTER
BARGAIN SHOW

BAY AREA
Computer
Swap

EVERY ITEM ON DISPLAY IS AVAILABLE FOR IMMEDIATE PURCHASE AT BARGAIN PRICES

SAN MATEO COUNTY
FAIRGROUNDS
SAN MATEO, CALIFORNIA

DIRECTIONS: Take Hwy. 101 to Hwy. 92.
Exit at Delaware and follow the signs to 2495 S. Delaware.

Admission $5 Children Under 12 FREE Sat. 10 a.m. - 5 p.m.
For Info. Call 415-340-9113

A MICROSHOWS PRODUCTION

Understanding your ideas is our business

We offer a personalized approach to typesetting and graphic services to meet your needs for brochures, newsletters, catalogs, price lists and other publications.

We provide quality work for your complicated forms and pay keen attention to the fine typography requirements of advertising projects.

Graphic Design • Typesetting
Transfer of your Macintosh or IBM compatible discs

image factory
4122 Broadway, Oakland, CA 94611
(415) 653-7793

APPLE COMPATIBLE DISK DRIVES

½ Height Apple Comp. $89
Full Height Apple Comp 99
IIc ½ Height Floppy Drive. 95
Macintosh 800K 170
Apple IIgs Drive 165

APPLE TYPE CARDS

IIe 80 column w/64K $44
IIe Column w/128K. 59
Disk Controller 42
Parallel Interface . . .40
Graphics Parallel . . .59
16K RAM Card. . . .34.95
Super Serial Card. . .69
CPM Card 29
No Slot Clock 39

DISKETTES

DS DD 5¼" Box of 10. . $4.50
High Density Box of 10 . $13
DS DD 3½" 14.50
10 Pieces
Apple & IBM Joysticks. $22
6 Outlet Surge Protector. 9
Apple II, II + Joysticks 15

MOUSE SPECIALS

M-2 Mouse w/Microsoft & PC Mouse Software $64
Genius Mouse w/Driver Software & Dr. Halo III & Mouse Pad 69
Mouse Pads. 6

CHIPS

Due to Price War Please Call For Best Prices
16K, 64K, 256K, 1 Meg 2716, 2732, 64, 256, 8087, 8087-2, 80287-6, 80287-8, 80287-10

STOP

AND COMPARE OUR PRICES

IBM COMPATIBLE DRIVES

TEAC 55BV ½ Height 360K $80
Fujitsu ½ Height 360K 75
Toshiba 1.2 Meg AT 99
3½" 720K with 5¼" mounting kit. 99
Toshiba 3½" 1.44MB 119
30 Meg w/Controller $319
20 Meg w/Controller 259
10 Meg w/Controller 125

IBM TYPE CARD

Floppy Controller. $34
XT 1.2MB Floppy Controller 52
Clock Card 34
Serial Card 34
Multi I/O 52
Hard Drive Controller 65
Hard Drive RLL Controller 75
Monochrome w/Print 49
DOS 3.2/3.3 w/GW BASIC . . .69/92
Samsung Amber Monitor 80
Clock Card w/Serial Port. 44
AT/XT EMS. 95
AT I/O. 45
No Slot Clock 39

MODEMS & CABLES

IBM 1200 Baud Internal. $69
1200 Baud HC AVATEX 109
2400 Baud External 149
1200 HC EXTERNAL 79
6' Parallel Cable. 8
Serial M-M or M-Female 8
IIc Modem Cable 10
Macintosh Modem Cable 10
IIe to IIC Drive Adapter 10

We Ship Daily • 90 Day Replacement Warranty
DEALER Inquiries Welcome • Minimum $2 Shipping Charge
No Charge Cards Accepted

GUENTHER

COMPUTER PRODUCTS INC.

312 Locust St.
Santa Cruz, CA 95060
New Larger Location To Serve You Better

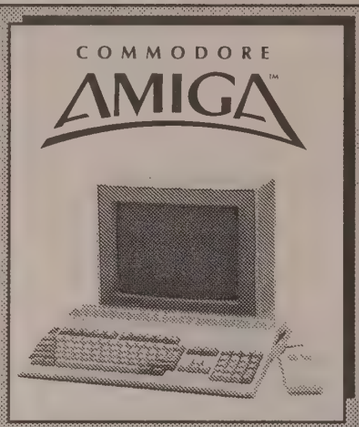
(408) 458-9404

Please Include $2 Minimum Shipping Charge

COMPUTER SPECTRUM SALUTES. .

HARRY S. BROWN — The Rocker Switch

In the early 1930's, Mr. Harry S. Brown designed the Rocker Switch. Today, it is widely used in all electronic equipment. Without it, we would not have



EXCLUSIVE!!!

New Software Titles Direct From Europe for the Amiga and Atari! Titles include Skyplot, Dizzy Wizard, Ball Raider, Drum Studio, The Gambler, and Trash Heap!

COMPUTER SPECTRUM
of Burlingame
1243 Howard Avenue, Burlingame, CA 94010 (415) 347-4576
Tues-Thur. 11 am-7 pm Fri- Sat. 11-6 Sun. 12-5 Closed Mon.

NUMBER 5 IN A SERIES. COLLECT THEM ALL!!

drugs, alcohol & AIDS prevention & treatment. Sysop: Janet Morgen, MPH

Emerald Lake Fog #48. (415) 365-2650. 300/1200/2400. No fee; immediate access, CP/M & DOS.

Foothill College Science And Engineering BBS. (415) 941-5725. 300/1200/2400 24 hrs. Educational Program Information. Sysop: Long Tran

Kortek. (415) 327-4589. 110 to 9600 8-N-1 24 hrs. PD BBS for IBM & MS-DOS computers. Free. Looking for new members with new ideas to be a better board.

Marin-Sonoma PC Users Group (MSPCUG). (415) 927-1216. 300/1200/2400 24 hrs. IBM PC software & talk. Biz application oriented, official electronic voice of one of most influential user groups.

Railbird's Racing BBS-100. (415) 278-0767. 300 8-N-1-E 3-8 AM. Offering Dialy handicap of races we feel we can beat. Trouble & Lasix list too. News on sports & much more!

Video Seven Bulletin Board. (415) 656-0503. For owners of Video Seven VEGA graphics products. Updates and Support.

Recovery BBS. (415) 441-2539. 300/1200/2400. Message sections include Alcoholics Anonymous, NA, CA, Alanon/ACA, SA, SLAA & others.

tsunami bbs. (415) 726-2726. 300/1200/2400 24 hrs. Graphics compatibility theme. GIFs, MacPaints, etc. Free!

City of Richmond BBS. (415) 620-6500. 300/1200 8-N-1 6PM to 6AM daily, 24 hrs. wknds. Public Interest information on city activities.

Everex Technical Assistance BBS. (415) 683-2924. 300/1200/2400 8-N-1 24 hrs. For Everex products. Oriented toward helping programmers write software that takes advantage of Everex's special features.

SFPCUG BBS. (415) 621-2609. 1200/2400 8-N-1 24 hrs. Emphasis on IBM & compatibles. Initial log-on open, thereafter open only to group members. Phone(415) 221-9166 for SFPCUG info. Sysop: Richard Couture

Earth-Rite BBS. (415) 651-9496. 300/1200 8-N-1 24 hrs. Forum for New Age, Eastern and Pagan philosophies and religions. Non-traditional philosphical and religious discussions.

Dail Your Match #56A. (415) 964-3255. 300 8-N-1 24 hrs. E-Mail, 5 public boards, match functions. No Fees.

The Billboard. (415) 686-4338. 300/1200 2AM to 8PM. In Concord, CA. Mostly Mac, but open to others. Red Ryder host. Great support, files, message areas. Sysop: Bill Maginnis

Bytes Are Us. (415) 489-2236. 300/1200/2400 8-N-1 24 hrs. MS-DOS only, Free. Union City. Sysop: Burke Telford

Matchmaker #417.(415) 843-8788. 300 24 Hrs.Sysop: Matchmaker

SuperResume Fido.(415) 546-0119. 300/1200 8-N-1 24 Hrs. A free resume compositon and carrer strategy service for software eng. professionals. Job listings. Voice: (415) 788-6000.

Western C Board. (415) 664-2067. 300/1200/2400 8-N-1 24 Hrs. Dedicated to programming languages: C, Pascal, Assembler, Prolog. Chat & private node. Sysop: Robert Baker

Dating Tree. (415) 656-1700. Adult dating subscription multi line BBS. Live chat w/16 lines. Fremont.

Buccaneer Bay Man O'

FREE USER GROUP/BBS LISTING

MicroTimes is a free computer magazine with a current monthly circulation of 140,000 copies per month in Northern and Southern California. We offer a free listing service to user groups, bulletin boards and computer associations. Let us hear from you. Use this coupon for your listing, and feel free to include additional information for our monthly user group column. Please send us your listing by the first of the month *preceding* the month in which you want your first listing to run.

We will run your listing as space permits until you tell us to stop, or until it's obviously obsolete. Please keep us posted on changes as they occur.

☐ **USER GROUP**

Group name _____

Meeting address _____

Meeting time and day _____

Contact name _____

Address _____

Phone number _____

☐ **BBS**

Name _____

Number _____

Parameters, operation hours, baud rate _____

_____

Sysop _____

USE SEPARATE SHEET FOR DESCRIPTION

Mail to: **MicroTimes User Group Listings**
5951 Canning St., Oakland, CA 94609

MICROTIMES
Classifieds
Work!

PRICE, QUALITY, SERVICE

EXP 80386 System

- 20 MHz 0 Wait Clock Speed
- 1 MB memory installed expandable to 2MB, 80287/80387 Socket
- 230W power supply
- AT style case
- 1.2MB floppy disk
- Hard disk & floppy controller
- Keytronics 101 keyboard
- 2 serial/2 parallel
- Built in EGA board
- Printer port
- 32 bit slot
- Made in USA

ONLY **$2,150**

YOUR LAST COMPUTER SYSTEM

*Available with Tower case

EGA option . . . $350
20MB hard disk $225
40MB hard disk $350
60MB hard disk $395

EXP 80286 System

- 512K memory
- 80286 10 cpu Phoenix Bios
- 6/10 MHz 0 wait
- 1.2 MB floppy drive
- Printer port
- Hard/floppy disk controller
- Real time clock
- Hercules compatible mono card
- 12″ tilt & swivel monitor
- AT style keyboard
- Hardware reset switch
- Turbo mode switch & LED
- 230W power supply.
- Keyboard
- No hidden cost - ready to run!
- Optional Tower case
- OS/2 tested

ONLY **$875**

12 MHz 0 WAIT System ONLY $980

EGA option $350
20MB Hard disk $225
40MB Hard disk $350
60MB Hard disk $395

EXP 8088 System

- 512K memory - expandable to 640KB
- 4.77/10 MHz clock speed.
- 360KB floppy drive.
- Serial port.
- Printer port.
- Game port.
- Real time clock.
- Hercules compatible mono card.
- 12″ Tilt & Swivel amber monitor.
- AT style keyboard.
- 150W power supply.
- AT style case.
- Keylock switch.
- Power on LED.
- Turbo mode LED.
- Hard disk drive LED.
- Hardware reset switch.
- No hidden cost, Ready to run.

ONLY **$560**

640KB memory $800
20MB hard disk. $275
Second floppy $75

EXP LCD System

- 20 Pounds
- High resolution LCD display
- 640 x 200 resolution
- 110/220 volt auto switch
- Very small size
- Using standard add on boards
- 5 expansion slots
- Supertwisted display
- EL backlight
- Two 5.25″ or 3.5″ hard disk & floppy disk

8088 System . . $1,050
80286 System . . $1,375
80386 System . . $2,650

SYSTEM REPAIR/DIAGNOSTIC/UPGRADE

We do system repairs, diagnostics & upgrades on your PC/XT/AT/80386

We will check your system and tell you the problem, & recommendation or quotation.

System check price:

PC/XT $20
AT $30
80386 . . . . . $40
Portable System . . $50

NON-Volatile EMS/RAMDISK Multifunction Board

- 2MB EMS with optional piggy back
- Serial port, parallel port
- Realtime Clock
- Upgrade your system memory up to 640K
- Keeps data after power off
- Made in USA

$79

Star NX 1000 Multi Font Printer

144 CPS high draft speed
36 CPS NLQ printing
8 built-in NLQ fonts
Proportional printing available
Push button control panel
Paper parking mechanism
Tractor and friction feed
IBM Proprinter/Epson emulation

$185 Free Cable

GENOA Super EGA Plus Thompson Ultra Scan Monitor

- Highest EGA resolution 800 x 600
- MDA, CGA, EGA, Hercules
- 132 column x 25/29/32/43/60 line
- VGA mode compatible
- Too many features to list here

GENOA Super EGA. $185
FREE Gem Graph S/W
Thompson Ultra Scan $465

FASTCARD IV

- 1MB EMS (w/0K) for XT
- Serial/parallel port
- Disk cache/spool
- Real time clock

$59

Everex 10MB EMS

The biggest EMS memory card for your 80286, 80386 system.

$149

ATI EGA Wonder

Any Software Any Monitor Any time

$185

Ultra EGA Plus

640x350 resolution
Autoswitch (using Paradise chip set)
EGA/CGA/Hercules compatible

$105

JC 14″ EGA Monitor

640x350 resolution
Amber/green text mode switch
Best quality. Come and see.

$339

JC 14″ TTL Monitor

720x350 resolution
Amber or green available
Built-in tilt & swivel. 110/220 volt.

$95

Everex EMS Multifunction

1 MB EMS memory (ØK)
2 serial (2nd serial optional)
1 parallel, game, clock

$75

MONITORS

Samsung 12″ TTL $75
JC 14″ TTL. 95
Gold Star EGA. 345
Thompson Ultra Scan 465
Mitsubishi Diamond Scan 489

ADD ON BOARDS

Multi I/O (FDC,S,P,G,C) $55
Mono graphic/printer. 45
Color graphic. 45
XT 1.2MB/720K/1.4MB FDC 55
EVEREX 1200B Modem 85
EVEREX 2400B Modem 195
XT hard controller 55
XT RLL controller 65
AT controller MFM/RLL . . . 119/145
Everex 3MB EMS (Lim 4.0). 85
ATI EGA wonder 189
Mono 132 Column/Printer 59
Everex EGA (800 x 600) 150
Everex EMS Multifunction 75

PRINTERS

Ricoh daisywheel (22 cps, 132 col.) $199
Epson LQ 500. 365
Citizen 180D 185
Citizen 120D 150
Panasonic 1091i 209
NEC P2200 24 pin. 365
Epson LX-800. 209
Star NX-1000 185

DISK DRIVES

FUJITSU 360K/1.2MB. $69/89
3.5″ 720KB/1.4MB 89/125
ST225/238 hard disk 225/239
ST251/ST251-1 hard disk . 385/445
ST4096 hard disk 799
Miniscribe 3650 (40MB, 60ms) . 329
ST125/138 (3.5″, 28ms). . 275/375

CPU Boards

8088 CPU Bd (4.77/8MHz). $75
8088 CPU Bd (4.77/10MHz) 79
80286 CPU Bd (6/10MHz). 259
80286 CPU Bd (6/12MHz). 325

MISCELLANEOUS

Handy Scanner $215
Keytronics 101 K.B 55
AT Jr. case/150W PS 38/43
AT case/230W PS 58/89
Logi bus/serial mouse 75
DSDD diskette 1 BOX 4
DSHD diskette 1 BOX 9
MSDOS 3.3. 89
Curtis universal printer stand. . . . 19
AC Multi outlet 10
Printer cable 5

Prices subject to change without notice.
UPS Shipping daily.

JEMINI ELECTRONICS

Formerly Xeltek

3400 De La Cruz Blvd. Suite #T
Santa Clara, CA 95054

Fax (408) 727-7687
Tel. (408) 727-9986

M-F: 9-7PM
Sat 10-4PM

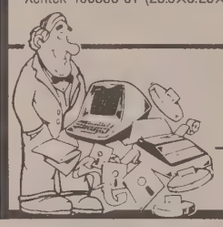
Power Supplies

Switcher

AcDc Electronics RS5N10-102-Enclosed (7×4.5×2.5) +5V @ 10A $19.95
Astec (7.75×4.25×2) AA11261 +5V @ 6A, +21V, ±25V or +28V @ 1A, +25V @ .2A $19.95
Astec AC8353 (6.25×7.50×2) +5V @ 3A, +24V @ 2.2A, −12V @ .17A $19.95
Boschert OL400-3015R (18.87×5.2×3.0) +5V @ 5A, −5V @ 2.5A, +12V @ 4A, −12V @ 4A, +24V @ 3A $49.95
Boschert XL45-3601 +5V @ 5A, +16 @ .2 ..... $29.95
Boschert 80020-01 20W (5×3×1) +5V @ 2.2A, +12V @ .35A, −12V @ .35A $12.95
Boschert 80015-0 20W (5×2×1) +5V @ 2.2A, +12V @ .35A, −15V @ .35A $12.95
Compower OL-50/65 (7.75×4.25×2) +5V @ 6A, +28V @ 1A, −5V @ .7A $19.95
CSS 83DA/8922 Open (5.5×3.5×1.5) +12V @ 2A $15.95
Data Power 15A0193-005 (6.25×10.75×2.5) 110 VAC +5V @ 16A, +24V @ 6A, +12V @ 8A, +12V @ 4A $59.95
Deltron Q250 (13.5×2.5×4.75) +5V @ 30A, +12V @ 4A, −12V @ 4A, +24V @ 4A $59.95
El Pac Power Systems MASS-210-3 (13×5×2.5) +5V @ 15A, +12V @ 6A, −12V @ 1A, −5V @ .5A $29.95
Pioneer Magnetics PM2675A-2-3 (10.75×5×8) +24V @ 10A, +12V @ 4A, +5V @ 5A $70.00
Pioneer Magnetics PM2497A-2 (11×8×5) +5 @ 100A $75.00
Xentek 80-0068-001, 110 VAC, +12V @ 1A, −12V @ 1A, +5V @ 12A $29.95

Linear

AcDc Electronics 5N5.7-1-E, 220V Only, 5V @ 5.7A $18.00
Computer Products PL161-001 (7×5.75×2.5) ±15V @ ±1.5A $24.95
Condor CP564 Open (10.5×3.5×6.5) −15V @ 6A, −5V @ 6A, +24V @ 4A, −12V @ 1A $29.95
International Power IHC12-3.4 (4.87×5.62×2.5) +12V @ 3.4A $19.95
Lambda LYS-W-28 (5×9×3) 28V @ 9.5A $39.95
Lambda M-YSW-2 LYS-W-28 ..... $19.95
Lambda LOS-X-5 Open +5V @ 9A $19.95
Lambda LOS-X-12 (7×2.5×4.75) 12V, ±5%, 5A @ 40°C $29.95
Power One CP205 Open +24V @ 1.5A, +5V @ 1A, −5V @ .5A $15.95
Soresen STM5-36 (14×5×3.5) 4.5-6V @ 36A $54.00
Soresen 15-10 (9.5×5.25×3.5) 13-17V @ 10A $45.00
Standard Power 30B20H Unregulated (2.75×5.25×2.4) 12V @ 1.5A $8.95
Xentek 100886-01 (23.5×5.25×5.25) ±5V @ 5A, ±121V @ 1A, −50V @ 1A $19.95



Computer Surplus Store
715 Sycamore Drive, Milpitas, CA 95035
408-434-0168 FAX: 408-434-0931
MAIL ORDER: 408-434-1060
9:00 a.m.–3:00 p.m. PST

War. (415) 797-9705. 300/1200 24 Hrs. Fun, information and entertainment. All computers- welcome. Multi-chat. Sysops: Grey Beard and Lady.

Microworld. (415) 845-1789. Atari ST oriented, but any computer may call. Running on an ST w/30 MB hard drive. No Charge. Sysops: Damian Warner and Rick Call

Emerald Lake Fog #48. (415) 361-1847. 300/1200/2400/9600. General info. DOS and CP/M. 232 MB. Wildcat BBS. Sysops:Dick Worth and Doug Spence

516

Pal-East. (516) 665-1851. 300/1200/2400 8-N-1 24 hrs. Multi-line, E-mail, live chat on-line, Public Boards & library. Geared to alternate lifestyles Sysop: Scott

619

Dial-Your-Match. (619) 428-0318. Imperial Beach.

Dial-Your-Match. (619) 741-1377. Escondido.

Dial-Your-Match. (619) 746-6751. Escondido.

707

911 Emergency Services. (707) 664-1639. 1200/2400 & 9600 Fastco 24 hrs. Oriented to emergency service employees: fire, police, EMS, & interested public. Free.

North Bay Billboard. (707) 552-9758. 300/1200/2400. IBM, Mac, Atari ST, 20 Megs. In Vallejo.

Cyborg—64. (707) 526-6464. 300/1200/2400. On-line user group suporting C64, C128, Amiga. 65 MB online!

The Power Station. (707) 552-0462. 300/1200/2400 8-N-1 24 Hrs. Supports IBM & compatibles, Apple, Atari. Utilizing Wildcat. Vallejo. Sysop: Joe Martin

Carenet. (707) 778-2341. 300/1200/2400 24 Hrs. A social concerns BBS. Listing non-profit & gov't asst agencies free. Profit agencies $12/yr. Mean 18 conference as well. Sysops: Tery & Gina Gefael

Survival Forum. (707) 545-0746. 1200/2400 Fido 125/7. Topics: Medicine, Science, Ham Radio, U.N. News. 'Nam Vets, Genealogy, Survival & more.

714

Adventurer's Castle. (714) 871-4119. 300/1200 24 hrs. Real time gaming. Sysop: William E. Hart

Amiga Friends. (714) 870-4754. 300/1200/2400 24 hrs. Run by one of S. California's largest Amiga clubs. Special interest sections, downloads, club activity information. Sysop: Scott Thayer

Bits & Pieces of Anaheim. (714) 630-8897. Amiga and IBM.

Bits & Pieces Time BPT-Main. (714) 630-8897. 300/1200/2400 24 hrs. No parity, full duplex. BBS determines baud rate by ret. key. Large software library for Commodore 64/128, Amiga & IBM. Sysop: Mike Dalton

Dial-Your-Match. (714) 825-0901. Colton.

Dial-Your-Match. (714) 773-5326. Fullerton.

Dial-Your-Match. (714) 682-8763. Riverside.

Dial-Your-Match. (714) 739-8822. Buena Park.

Dial-Your-Match. (714) 751-4860. Santa Ana.

Dial-Your-Match. (714) 857-2470. Irvine.

French Connection. (714) 858-8111. 300/1200/2400/9600. 16 multi-line BBS in Orange County. Dating service; 500 megs of software for users. Sysop: Stephen M. Cohen

Fretwork. (714) 974-7428. 300/1200 24 hrs. Punter protocol for file transfers. Commodore specific. C-TUG members's night - every Fri. Sysop: Jeff Griffith

HOT SOFTWARE

$2 PER DISK — IBM PC COMPATIBLE — $2 PER DISK

Send $1 for 200+ Disk Catalog On Disk! $1 Shipping Per 5 Disks + .07 Tax

E001	PC-Write 2.71 With Spell Check (2)	**P006**	Print Shop Clone
E003	PC-Outline 3.3 Memory-Resident	**D001**	Dos Tutor
S001	ASEASY Vers 3.0 1-2-3 Clone	**LC024**	Turbo C Tutor (2)
DB001	PC File Plus 2.0 (3)-Super Data Base	**LC025**	Turbo C Debugger
DB003	Dbase3 Tools-Code Analyzer +	**M000**	ProComm Plus-Modem Program
U010	Great Mail List Manager-Mass Appeal	**E009**	Homebase 2.5 Sidekick + (3)
D005	Still River Shell V, 2.24	**U001**	PC Mag 100+ Utils (2)
B002	EZ Forms Generator	**B011**	Hard Disk Menu III-Forget Automenu
B007	Pro Masterkey Utils-Unerase, Unformat, +	**P004**	City Desk 6.0 Dot matrix Desk Top Pub
B022	Disk200 Norton Advanced Utils Clone (2)	**L005**	QEdit 2.03 Brief Clone-Super Editor

P005 LQ Print-New Version 2.26 Letter Quality with 17 Fonts on Dot Matrix
3½" Disks Available—$3 each or 2 360K for $4.50

GENERIC COMPUTER SYSTEMS
22612 FOOTHILL BLVD., SUITE 200C, HAYWARD, CA 94541 415-581-1494
Walk-in Hours 9-7 Mon-Wed-Thur-Fri

LASERWRITER OWNERS

Make an extra

$10.00 !!! **$20.00 !!!** **$30.00 !!!**

Give us your old Laser Toner Cartridge & we'll give you

$10.00

for each cartridge & felt wiper

New Toner Cartridge	Re-Manufactured Cartridge
Just **$89.95** with exchange & your old wiper blade (without exchange $99.95)	Just **$59.95** with exchange & your old wiper blade

Software for Le$$
950 Taraval at 20th
San Francisco, CA
(415) 753-1066

Subscribe to MicroTimes

And you'll be the winner in more ways than one! You'll get new product updates, software and hardware reviews, industry news and information, user group info, and so much more.

You'll be right on the pulse of the computing world you live in here in California. And you'll never miss a beat, because you've subscribed to MicroTimes and it's delivered to your home every issue.

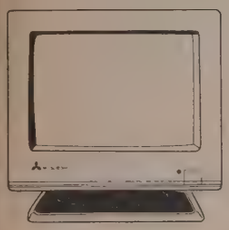
Start my subscription—

Company Name_____
Name _____
Address _____
City _____ State_____ Zip_____
Please send me: ❑ Bay Area Edition ❑ L.A. Edition
Inside U.S.:❑ 1st Class $50/12 issues ❑ 3rd Class $24/12 issues
Allow 3 to 4 weeks for delivery
❑ I have enclosed check for $_____
❑ Please charge $ _____ to Visa/MC
_____ Exp. _____
Card Name _____
Signature _____

California's Computer Magazine **MICROTIMES**

Send to: **MicroTimes Subs,** 5951 Canning St., Oakland, CA 94609

Mitsubishi
13" Diamond Scan



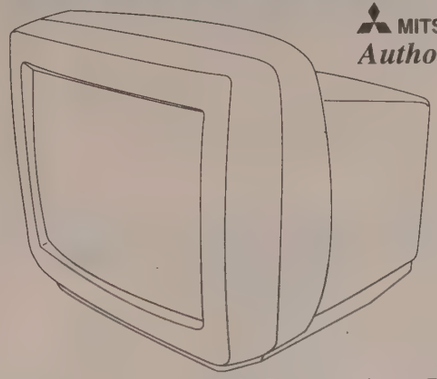
MITSUBISHI ELECTRONICS
Authorized Distributor

Best Price & Availability, Best Overall -

- **Resolution to 800 x 600**
- **MDA, Hercules Monochrome**
- **CGA, EGA, PGC**
- **VGA, Macintosh II**
- **Available in Quantity!**

Mitsubishi
19" Diamond Scan
HA3905ADK

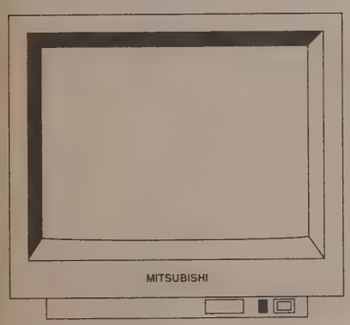
MITSUBISHI ELECTRONICS
Authorized Distributor



New 19" Multi-Scanning Monitor -

- **Resolution to 1024 x 768**
- **CGA, EGA,PGC, VGA, Mac II**
- **120/240 VAC Switchable**
- **Immediate Availability!**

Mitsubishi
19" Color Monitor
Macintosh II
C6922PVMK



Mitsubishi Quality for Macintosh II -

- **Low Price**
- **Resolution to 1024 x 560**
- **In Stock - immediate shipment**

13" 19" 35"

Mitsubishi Color Monitors and Video Display board combos for every color graphics application from TASK! - Call!

Call for a Complete List of Products

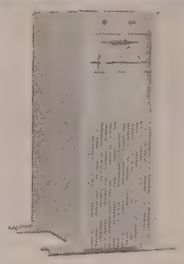
TASK TECHNOLOGY, INC.

244 Sobrante Way Sunnyvale, CA 94086

(408) 773-0600

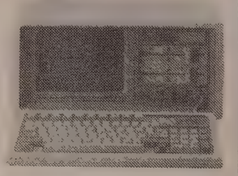
(800) 992-TASK

Your Source for Reliable Computers & Peripherals Since 1983



MONTHLY SPECIAL

- TOWER 386 BASIC SYSTEM ..... $CALL
- 44 MB HARD DISK 545
  (HALF HEIGHT, 28ms, AUTO PARK)
- 20 MB Hard Disk (65ms) 215
- Star NX-1000 Printer $179



THE WORLD'S 1st
EGA PORTABLE 386 .....CALL
EGA PORTABLE 286 .....CALL

INTRODUCING

BEAVER HI-RES 1024
- 14" Paper White Monitor (Flat Screen)
- 1024x768 Resolution
- Hi-Res Graphic Card **ONLY $595**
- For Desktop Pub. & CAD

12MHz 0 WAIT 286
- 512K Memory
- 1.2MB Floppy
- HD/FD Controller
- Keyboard
- **Norton SI=15.3**

ONLY $895

SYSTEMS

PORTABLE 386 ..... $2950
- 44MB hard disk (28ms) • 1MB RAM
- 16 MHz (0 Wait) • 1.2 MB floppy
- Serial/parallel port

(Call for 20 MHz System)

PORTABLE 286 SYSTEM $1425
- 1MB RAM • 10MHz (0 wait)
- 1.2MB floppy • MGP card

PORTABLE TURBO XT $995
- 10MHZ • 640K • Two floppy drives
- Serial/parallel/clock/game

SUPER BABY 286 ..... $CALL
- Small Foot Print Case • 200W PS
- 1 MB RAM • 10 MHz (0 Wait)
- 1.2 MB floppy • Mono Monitor

386 DESKTOP SYSTEM $2050
- 1 MB RAM • 1.2MB floppy • 200W P/S
- WA-2 controller • 101-key keyboard

10MHz TURBO XT ..... $CALL
- Monitor • 150W P/S • 640K RAM
- One floppy drive • Keyboard

Call For EGA or Color Upgrade

MONITORS

EGA Monitor $350
14" Amber w/base (by SONY) 115
Samsung amber 12" w/base 74
RGB Monitor (14") 250
Multi-Frequency Monitor ..... CALL

POWER SUPPLY

200W $65
150W 49

KEYBOARDS

RT style enhanced 101-key
- with **CLICK** sound $65
- no click sound 55

AT style 84-key
- with **CLICK** sound 55
- no click sound 40

BOARDS & ADD-ON CARDS

386 System board $1399
Baby AT System Board (0K) 295
12MHz (0 Wait) 286 Board 299
AT I/O card (**2S/1P/1G**) 49
XT multi I/O card 50
XT I/O Plus II card 45
AT/XT floppy controller 45
(for 1.2MB/720K/360K floppy)
XT floppy controller 25
286 accelerator card 199
Hard disk controller (XT) 65
WA-2 controller (AT) 129
EGA Wizard Deluxe 199
Mono/graphic/printer card 45
Color graphic card 40

ACCESSORIES

Baby AT case w/200W Power (Small Foot Print) $125
Full size AT case 65
Portable computer case 450
Keyboard drawer (wood) 30
Diskette box $5.95
Vertical computer stand 15
Switch box (all models) 25
Panel Display 45
(Show Speed & I/O Access, Reset)

DRIVES

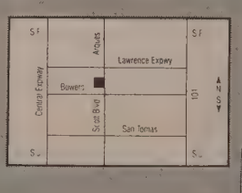
30MB w/controller $288
20MB w/controller 275
40MB drive (40ms) 389
1.44MB 3.25" floppy 109
1.2MB floppy 95
720K 3.25" floppy 95
360K floppy 69

Prices subject to change w/o notice

Dealer Pricing & Quantity Pricing Available

STORAGE SYSTEM ENGINEERING SERVICE

3350 Scott Blvd., Building 19, Suite 1902 (near Bowers Ave.)
Santa Clara, CA 95054 **(408) 727-6040**



FAX 727-6042
HOURS: 10 AM-7 PM
Mon-Sat

master charge
VISA

Happy Trails. (714) 547-0719. 1200/2400 8-N-1 24 hrs. MS-DOS; Multi-user; E-mail; Downloads; SIG's; On line games Sysop: Don Inglehart

Imperial Palace of DB. (714) 860-0889. 1200 24 hrs. Commodore 64, 128.

Nebula 6. (714) 595-6577. 300/1200/2400 8-N-1 24 hrs. Write for a free newsletter. P.O. Box 1071, Walnut, CA 91788. PC-Pursuitable. Sysop: Michael Quirino

Network XXIII. (714) 548-4836. 1200/2400/9600 8-N-1 24 hrs. On-Line registration; 1500+ files; conferences; online games. Sysop: Jim Brandon

PC Exchange. (714) 956-5468. 2400/4200 24 hrs.

PC Exchange. (714) 956-5468. 1200/2400/9600.

PC-LAIR. (714) 839-9580. 300/1200/2400 8-N-1 24 hrs. PC-DOS; MS-DOS. Large PD software library. Sysop: Eric Drochner

Software Exchange. (714) 552-3515. 300/1200/2400 8-N-1 24 hrs. For IBM & compatibles. Over 3000 programs in 152 megs. Fastest-growing BBS in Southern California! Sysop: John Coon

The Byte Zone. (714) 491-7635. 300/1200 24 hrs. Serves all Tandy computers & many others, incl. MS-DOS. Features adventure help files, elect. mail,message bases, etc. Sysop: Franco Collino

The End of the Line. (714) 645-6581. 300/1200/2400 8-N-1 24 hrs. Running Wildcat BBS software. Pub. dom.& shareware for IBM & compatibles. Private/pub. message bases. Scorecast data files. Sysop: Bob Kelly

TripWire TECHnologies (PCB). (714) 964-1146. 1200/2400 24 hrs. Multilingual operations with 7 national echomail areas. (Beta testing PCBmail) Sysop: William Kidd

Wellspring RBBS. (714) 856-7996. 300/2400 M-F 5 PM-8 AM. S-S 24 hrs. Medical/AIDS/Software.

Calsonic. (714) 830-5958. Password=CII. Use real names. Sysop: Kerry Williams

Toshiba BBS. (714) 837-4408. 1200 8-N-1 24 Hrs. Toshiba laptop support.

717

Dead Board. (717) 677-9573. Sysop: Captain Trips

805

Success BBS. (805) 238-7359. 300/1200 24 hrs. Sysop: Larry Sarver

The Digital Dungeon. (805) 683-2436. 300/1200/2400 8-N-1 24 hrs. Open System designed to be an open forum. Primarily a conversation system. Sysops: Jerry Ash, Doug Sander

818

Fox Hole. (818) 332-3073. 300/1200 24 hrs. Home of Pervert's Palace. On-line games etc. Write for info: P.O. Box 1071, Walnut, CA 91788. Sysop: Dr. Foxe, Ultamacy

Dial-Your-Match. (818) 888-6688. Canoga Park.

Dial-Your-Match. (818) 845-5325. Burbank.

Dial-Your-Match. (818) 247-6343. Glendale.

Dial-Your-Match. (818) 954-0790. Burbank.

Dial-Your-Match. (818) 506-6300. N. Hollywood.

DELOS. (818) 242-2365. 300/1200 24 hrs. Lo-cost access or free ltd. use. Serving the Gay Community. 10 lines for chatting! Library & many public boards.

DELOS. (818) 242-1410. 2400 24 hrs. Lo-cost access or free ltd. use. Serving the Gay Community. 10 lines for chatting! Library & many public boards.

Dial-Your-Match #1. (818) 842-6900. 300/1200 24 hrs. The original dating BBS on-line since 1981. Fill out a personalized questionnaire & join the fun!

Fantasy Plaza. (818) 840-8066. Burbank.

Hard Ball PC Board. (818) 713-0420. 1200/2400 8-N-1 24 hrs. Programming conference specializing in Pascal. Huge P/D & Shareware Filebase for PC & compatibles.

LEGACY - The Law Network. (818) 990-7600. 1200 8-N-1 24 hrs. Info on Computer Law, Entertainment Law, Comms. Law. Pro bono conference for free legal advice to non-lawyers. Sysop: Richard H. Kohn, Esq.

Lynzie's Motherboard. (818) 508-6482. 300/1200/2400 8-N-1 24 hrs. Multi-interest. Social events for users. If you're looking for a discriminating BBS, this is the place to be. Sysop: Lynzie Flynn

Mysteria. (818) 353-8891. 300/1200/2400. Occult & general text files, CP/M, turbo Pascal. Sysop: Phil Hansford

Oracle. (818) 509-9681. 300/1200/2400 8-N-1 24 hrs. 9 phone lines. System password MICROTIMES for higher access. Free demo version of Oracomm BBS software. Sysop: Gary Young

Lowest Prices Ever on KAYPRO Computers

Here Are 6 Reasons to Choose the KAYPRO 286

1. **Non-Obsolete Design.**
   Updates simply snap into place. With OS/2 compatibility - guaranteed (Passive Back Plane Technology).
2. **The Complete Office System.**
   Top-quality monitor, 101-key keyboard, 9 expansion slots, and 1 MB of RAM.
3. **12 MHz High Speed Processing.**
   Or switch easily to 6 MHz.
4. **12-Month Warranty.**
   Standard with every KAYPRO 286.
5. **American-Made Quality, Service, and Support.**
   For business solutions Made-in-the-U.S.A.
6. **Lowest Prices Ever**
   On Kaypro Computers

CLONE PRICES
KAYPRO FEATURES
& QUALITY

Special Purchase Pricing

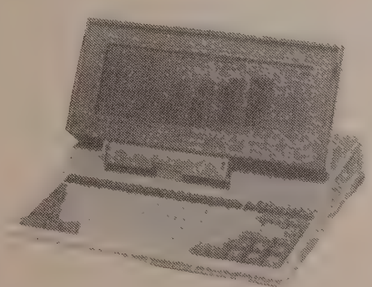
***12 MHz KAYPRO**

20 MB COMPLETE SYSTEM **$1995**

Includes:
- 1 Meg RAM
- 20 MB Hard Disk
- 12 MHz Speed
- 1.2 MB Floppy Disk
- Keyboard
- Monographic Card
- Hi-Res Mono Monitor
- I/O Card
- Parallel/Serial
- MS DOS/GW BASIC
- Options:
- 40 MB Hard Disk. . . .ADD $200
- EGA System . . . . . .ADD $400
- EGA System w/Multiscan

TOSHIBA T1000 LAPTOP COMPUTER

Only
$745
While Supplies Last



Call For Best Kaypro Prices In The Bay Area

COMPUTER INSIGHTS
Specialists in Computer Applications to Business

40961 Grimmer Blvd., Fremont, CA 94538 (across from Tri-City Sports) **(415) 490-0685**

Party Line. (818) 842-3322. 300/1200 24 hrs. 11 phones. The most exciting multi-user chat system in Cal.! Also, integrated matching system, up-download, chat link sys.

The Board with No Name. (818) 785-3340. 300/1200. A gay-oriented BBS. No hourly fees; no time limit w/ paid access. 16 lines.

The Board with No Name. (818) 785-6428. 2400. A gay-oriented BBS. No hourly fees; no time limit w/ paid access. 9 lines.

The Ledge PC Board. (818) 352-3620. 300/1200/2400/9600. All systems welcome, full support for IBM PC/AT compatibles.

The Software Bank. (818) 993-5516. 300 to 9600. Atari ST only. 65 megs. Node #95 of FNET. Exchg. messages & files w/users on other FNET BBS nationwide thru our network. Sysop: The Software Bank

Dial-Your-Match. (818) 785-3498. Van Nuys.

Party & Chat Line. (818) 842-3322. Burbank.

Lynzie's Motherboard. (818) 508-6482. 300/1200/2400/9600 8-N-1 24 hrs. Matching, group and private chat system, local social events. S.F.V. Sysop: Lynzie Flynn

Lynzie's Motherboard. (818) 989-3875. 300/1200/2400/9600 8-N-1 24 hrs. Matching, group and private chat system, local social events.S.F.V. Sysop: Lynzie Flynn

Fantasy Plaza. (818) 840-8066. 300/1200. Online adventure game.

Plaza Party Line. (818) 842-3322. 300/1200. Chat with 11 other callers. No hourly charges. Adult sections. Lots of women callers. Online since 1983.

916

Dial-Your-Match. (916) 275-1265. Redding.

Dial-Your-Match. (916) 736-0739. Sacramento.

24th Street Exchange. (916) 451-7179. 300/1200/2400 8-N-1 24 hrs. Opus-based system. Free access. Lge. selection pub. domain files for IBM & compatibles. Special interest areas. Sysop: Don Kuhwarth/Laura Stua

Send your BBS Listing to:

MicroTimes BBS
5951 Canning St.
Oakland, CA
94609

ASSOCIATIONS

SF Robotics Society. Meetings: 2nd Mon. Homestead Savings, Community Hall, 5757 Geary (at 22nd), SF. Guest speaker, developers' roundtable.

North Bay Users Group (NBUG). Meetings: 2nd Thurs. 7:30-10 PM 201 Maine St., Vallejo, CA. Family Computer Club dedicated to all forms of computing.

AI Expert Systems for Business (ESB). Meetings: 1st & 2nd Sun. San Francisco. Business PC expert system solutions. Determine market opportunities, group research projects. (415) 564-6669

PC Publishers of San Francisco. Desktop Publishing. Ventura, PC Pagemaker & others. Call (415) 661-9270.

Silicon Valley Computer Society. Contact Kent Stafford (408) 286-2969. Or write to 2464 El Camino Real #190, Santa Clara, CA 95051.

Association For Women In Computing. For information call (415) 655-3110 or write to 41 Sutter Street, Suite 1044, San Francisco, CA 94104.

MIDICRUZ Computer and Music Users. Meetings: 1st Thurs. 7:30 PM 200 Seventh Ave. Suite 225, Santa Cruz, CA 95062. Contact Robert at (408) 476-8464.

Bay Area Desktop Publishing Users Group. Meetings: each Tues. 7 PM Spats Restaurant, 1974 Shattuck Ave., Berkeley, CA.

California Genealogical Society Computer Interest Group. Meetings: 2nd Sat.- odd months Genealogical Society Library, San Francisco.

Computer Associates UG. Meetings: 3rd Wed. Gateway Holiday Inn, San Francisco, CA.

Computers & Law Assoc. Meetings: McGeorge School of Law, 3200 Fifth Ave., Sacramento, CA 95817.

Entrepreneurial Support Group. CEO. Meetings: SASE, P.O. Box 2781, San Rafael, CA.

Professional Association Of Secretarial Services (PASS). Meetings: 2nd Sat. Oakland. Group for self-employed word processors. Contact Nina Feldman (415) 655-4296.

The Society For Technical Communication. Meetings: 1st Wed. 7:00 PM Room #3, SMUD Facilities, corner of Elkhorn and Don Julio, Sacramento. Devoted to the advancement of the theory and practice of technical communication.

Software Entrepreneur's Forum (SEF). Meetings: 3rd Thurs. 1875 Embarcadero Rd., Palo Alto. Helps individual software developers and startup software companies. Call for complimentary newsletter. (415) 854-7219.

ProTel (Professionals In Telecommunications. Meetings: Monthly. A network organization bringing together people interested in the world of telecommunications. Call (415) 227-5637.

Artificial Intellegence Special Interest Group. Meetings: 2nd Thurs. Engineering 101,Santa Clara University. Independent nationally recognized group studying and developing AI and artificial neural networks. Call Kent Byron (408) 244-8739 for info.

Bay Area Desktop Publishing User's Group. Meetings: Tues. 6-8 PM Norman's Restaurant, 3204 College Ave., Berkeley. (Corner of College and Alcatraz. For

Send YOUR User Group Information to:

MicroTimes
USER GROUPS
5951 Canning St.
Oakland, CA 94609

GRAND OPENING SPECIALS!!!!

PERSONAL COMPUTERS

XT COMPATIBLE TURBO SYSTEM
20 MEGABYTE HARD DISK
4.77/10 MHz CLOCK SPEEDS

- 20 megabyte hard disk
- Dual speeds—keyboard or switch selectable
- 256K RAM memory expandable to 640K
- 8 expansion slots
- 150 watt power supply
- One 360K half height floppy disk drive
- Hercules compatible graphics card
- Parallel port for printer
- 84 key AT style keyboard
- Power, turbo and hard disk LEDs
- Keyboard lockout
- 12" amber monitor with tilt and swivel base
- One year warranty on parts and labor

$695

512K upgrade $96
640K upgrade $118
Multi I/O card $59
3.5" 720K drive $109

AT COMPATIBLE TURBO SYSTEM
20 MEGABYTE HARD DISK
8/10 MHz CLOCK SPEEDS
0/1 WAIT STATE SELECTABLE

- 20 megabyte hard disk
- One 1.2 megabyte floppy drive—reads both 1.2 and 360K disks
- 512K RAM memory expandable to one megabyte
- Dual clock speeds—keyboard or switch selectable
- 0 and 1 wait state selectable
- 8 expansion slots—2 8-bit slots and 6 16 bit slots
- 180 watt power supply
- Mini AT case—takes up 20% less room than IBM AT
- Hercules compatible graphics card
- Parallel port for printer
- 101 key enhanced AT-RT keyboard
- Power, turbo and hard disk LEDs
- Keyboard lockout
- Hard disk and floppy disk controller
- 12" amber monitor with tilt and swivel base
- One year warranty on parts and labor

$1095

640K upgrade $62
1 MEG upgrade $195
AT I/O card $49
3.5" 720K drive $109

These specials are in effect May 1, 1988 through May 31, 1988.

DISCOUNT COMPUTER PRODUCTS

14895 E. 14TH STREET
SUITE 140
SAN LEANDRO, CA 94578

(415) 357-6530

PC Components Headquarters

YES-386 20 MHz

- 20/8 MHz Motherboard
- 1 MB RAM Expandable to 2MB/More
- 200 Watt Power Supply
- 1.2 MB Floppy Drive (Japan Made)
- AT Type Keyboard
- Hi-Res Monographics/Printer Card
- 12″ Mono Amber Monitor (720x348)

$2288

16 MHz COMPLETE . . . . . .CALL

YES-286 10 MHz

- 10/6 MHz Motherboard
- 512K RAM Expandable to 1MB
- Hard/Floppy Controller
- 1.2 MB Floppy Drive (Japan Made)
- AT Type Keyboard
- Hi-Res Monographics/Printer Card
- 12″ Mono Amber Monitor (720x348)

COMPLETE SYSTEM **$888**

12 MHz COMPLETE $999

TURBO XT

8/4.77 MHz Turbo Motherboard
256K RAM Expandable To 640K
150 Watt Power Supply
360K Floppy Controller
360K Floppy Drive (Japan Made)
AT Type Keyboard
Hi-Res Monographics/Printer Card
12″ Mono Amber Monitor (720x348)

COMPLETE SYSTEM **$468**

10/4.77 MHz SYSTEM .**$488**

Seagate HARD DISK (cash)

20 MB w/Contrlr	$259
30 MB w/Contlr	288
30 MB 4038	448
40 MB 251	388
40 MB 4053	588
80 MB 4096	688
OTHER MODELS	CALL

**Prices Good Thru May 10, 1988

DISK DRIVES

TEAC 360KB/1.2 MB	$75/90
FUJITSU 360KB/1.2MB	65/85
3½″ 720KB/1.44 MB	90/129
APPLE COMP. Disk Drives	IIe $90/IIc $99
OEM 360K	60

MONITORS

14″ Monitor (720x348) Amber-Green-Black & White	$88
15″ Dualscan Monitor	128
14″ Ultrascan/Multisync Monitor (800x560)	448
NEC Multisync II	588
NEC Multisync Plus	948
Tape Back-Up	LOWEST

ADD ON BOARDS

Monographics Card w/Printer Port	$45
Color Graphic Card w/Printer Port	40/45
Paradise EGA 350	168
ATI EGA Wonder	199
Paradise EGA 480	188
Everex EGA 350	128
Everex EGA 480	178
Genoa EGA (800x600)	188
XT Floppy controller card	18
Multi I/O Card	48
Printer Card	20
RS-232	20
Clock Card	25
Game Card	20
AT Floppy Controller	48
AT I/O Card	55
XT 2nd Serial Kit	15
AT W.D. Floppy/Hard Controller	125
AT 2nd Serial Kit	25
2MB EMS RAM Card (XT/AT)	75/85
1200 Internal Modem	68
2400 Internal Modem	128

SERVICE

- PC/XT/AT/386
- Hardware Installation & Troubleshooting
- Software SetUp & Training
- Available For Emergencies With Appointment
- Reasonable rates

MISC.

Gender Changer (25-25; 9-9)	$5
Printer Cable 6′/9′/15′	6/9/15
6′ RS-232 (MF,F-F, M-M) Cable	9
Monitor Extension Cable	9
Keyboard Extension Cable	9
Hard/Floppy Disk Cable	6
XT Case	27
XT Case AT Lookalike	35
Baby AT Case	45
AT Slide-In Case	54
Diskette Box (cap 100 pcs)	8
Data Switch Box (AB:ABC:ABCD)	20/24/29
Dot Matrix Printer	165
Power Station (with surge)	29
Surge Protector (UL Approved)	10
150W/180W/200W Power Supply	45/60/75
5060 (AT-XT Switchable) Keyboard	45
Enhanced (AT-XT Switchable) Keyboard	55
Mouse Pad	9
Printer Stand (80/132 Columns)	14/19
System Stand	14
Joystick	25

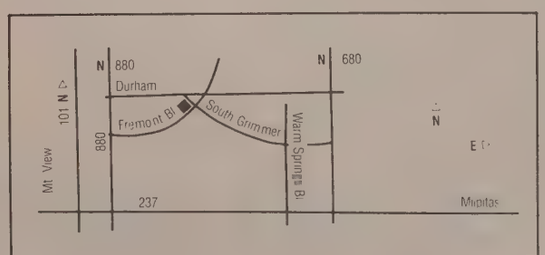
We Carry Too Many Items To List Fully
Call For Products Not Listed

Y.E.S. Multinational, Inc.

Dealer Inquiries Welcome

(415) 657-4888 •

44833 Fremont Blvd., Fremont, CA 94538 Mon-Fri 10:00-6:30 • Sat 10:00-5:00
FAX (415) 656-0118



^t to change w/o notice Not responsible for typographic errors

CHECK US OUT!

SYSTEMS
Toshiba Laptops ..... CALL
Zenith Z181 ..... $1650
AST Premium 286/386 ..... CALL
Acer 1100 (386) w/40MB 3029
Micronics 386 Systems ..... CALL
Everex 386-20 MHz ..... CALL

MONITORS
Sony Multiscan $625
NEC Multisync II 560
Mitsubishi

Diamond Scan 525
Amdek 1280 685
AST Premium Mono 159
NEC Multisync XL ..... CALL
NEC Multisync Plus ..... CALL

SOFTWARE
Ventura Publisher $459
Borland & Microsoft ..... CALL

PRINTERS
NEC P2200 ..... $334
NEC P6 455

Okidata 294 ..... LOWEST
Epson & Tosihba ..... LOWEST
NEC LC 890 ..... CALL

HARDWARE
Video 7 Vega VGA $265
Genoa Super EGA 249
AST Boards ..... CALL
Paradise VGA Plus 279

FLOPPY DISKS
Teac 55BV 360K/55GFV1 ..... $72/87
Toshiba 3.5 720K/1.44MB 99/150

HARD DISKS
Seagate ST225 ..... $209
Seagate ST 251/251-1 ..... 365/465
Micropolis 1335 70MB 28ms 675

COMPONENTS
256K, 15/12/10 ..... CALL
64K 15/12/10 ..... CALL
256K x 9 SIMM N.S. ..... CALL

MISC
Genius Mouse $55
MS DOS 3.21 72

DEALER INQUIRIES WELCOME
Price subject to change
Authorized AST Dealer.

VALLEYTEK INTERNATIONAL
1618 Pomeroy Ave. *(off El Camino Real)*
Santa Clara , CA 95051
(408) 984-0107
Fax: (408) 980-1795

High Quality — **EVEREX** — Best Service

SYSTEM 3000 80386 AT
$CALL For Best Price
- ☐ Intel 80386-16 CPU
- ☐ 1MB Of Fast RAM
- ☐ 64K Static RAM Cache
- ☐ 1.2MB TEAC Drive
- ☐ 16MHz 0/1 Wait State
- ☐ Compatible with IBM AT
- ☐ Maxi Switch Keyboard

SYSTEM 1800 80286 AT
$850
10 MHz: $950 12 MHz: $1299
- ☐ 100% Compatible with IBM AT
- ☐ 6/8 MHz Selectable Intel 80286
- ☐ 512K on 1 MB M.B.
- ☐ 195 Watt Power Supply 110/220
- ☐ Everex HD/FD Controller
- ☐ 1.2 MB Teac High Density Drive
- ☐ Runs Autocad, Xenix, Novell, all Prop. Software
- ☐ 200 Pages of documentation (written in USA)
- ☐ AT Keyboard (Maxi-Switch) Clock, Calendar

SCHWAB TURBO AT 10 MHz/0 Wait
Complete Monochrome System $1050

SCHWAB TURBO XT 10MHz/0 Wait $524
256K, 360K, Maxi Switch K.B. Complete Monographics System

Seagate 20 MB $250
Seagate 40 MB (ST 251) 445
Miniscribe 72 MB 799
Everex 20 Meg SubSystem 269
Everex 30 Meg SubSystem 309
EGA Monitor + EGA Card 510
Mono Monitor + HGC 139
Everex Modem 1200/2400 ..... 85/179
Everex RAM 3000 ..... Call

3282 El Camino Real
Santa Clara, CA 95051
(408) 241-1210
Daily UPS Shipping

SCHWAB COMPUTER CENTER
"The Everex Store" An Authorized Dealer

We Accept
Hours: 10-7 Mon-Fri
11-4 SAT

ATARI ST: The Choice of Achievers!

There is a Motorola 68000 based machine that runs Macintosh software *20% faster than a Macintosh.* It uses Digital Research's GEM, and will also run IBM software. It is one of the most popular personal computers in Europe. It is the number one personal computer in Germany. It is the Atari ST.

There are literally *thousands* of software titles to choose from. Everything from fully integrated business packages to sophisticated CAD/CAM programs, state-of-the-art music software, 4,096 color paint programs, 3D modeling and animation, desktop publishing, educational software for pre-schoolers to college graduates and *the most amazing games you've ever seen!*

ATARI®
Power Without the Price™

Available now at P.C. Options:
where the perfect choice in personal computers is perfectly clear!

P.C. Options is located at 411 Divisadero (between Oak and Fell) in San Francisco. We are open 12 to 6pm, Tuesday thru Saturday *or by appointment call 861-5327.* Macintosh is a registered trademark of Apple.

LASER PRINTING FOR IBMs? IT'S HERE!

Now you can laser print your documents conveniently. Scheduled appointments mean no waiting. And you can choose either the LaserWriter or the all new 600 dpi printer for only $1 per page. Call today and find out why we're called The *Cooperative* Type.

- Ventura
- PageMaker
- and more!
- Microsoft Word
- Word Perfect
- Macintosh, too.

LASER PRINTING

Full Service
Design, Paste-up, Desktop Publishing
Computer/Laser Rental
$6/hour, 30¢/page
600 dpi Varityper VT-600
Only $1/page–Four times better than LaserWriter–Never use a Lino again!
Camera
PMTs, halftones & more
Disk Conversion
IBM - CP/M - Mac

THE COOPERATIVE TYPE 415/843-8973
2490 Channing Way, Suite 401 Berkeley, CA 94704

more info call Dr. C.J. Wallia at (415) 848-8200.

Business Computerization User Group. Group forming. Write 6938 Buckingham Blvd., Berkeley, CA 94705, or call (415) 848-2080.

USER GROUPS

AMIGA

Amiga Addicts Anonymous (AAA). Newsletter, public domain library, demonstrations.

ASCITEC: The Amiga Science & Technology Users Group. Meetings: 2nd Thurs. 5-7 PM Lockheed, B/157, Rm. 4-C, Sunnyvale, CA. Scientific/Video Applications. Classes available.

AUGment - Amiga Users Group of Silicon Valley. Meetings: 2nd Fri. Write to P.O. Box 1863, Fremont CA 94538 for more info.

Bay Area Amiga Developers Group (BADGE). Meetings: 3rd Thurs. 8 PM Turing Auditorium, Stanford University, Stanford, CA. For all Amiga programmers. No membership fee.

Northern California Amiga Club. Meetings: 2nd. Sat. 1:30 PM Business Incubator, 4311 Airport Rd., Redding, CA. $15/yr., monthly newsletter, access to PD disk library, SIG's & support.

SMAUG — Silinas-Monterey Amiga Users Group. Meetings: 3rd Tues. 7 PM Seaside Library, 550 Harcourt Ave., Seaside, CA.

ACCESS (The Amiga And Commodore Computer Enthusiasts Society). Meetings: 3rd Tues. 7:30 PM Community Room of Homestead Savings & Loan, 999 E. Stanley Blvd., Livermore, CA. Contact Ron Kremkow at (415) 449-1784.

Vallejo AMiga People (VAMP). Meetings: 2nd Tues. 6:30 PM Software 1st, Vallejo Corners Shopping Center. Contact Bill Braun at (707) 554-0263.

Amiga East Bay Info Exchange (AEBIE). Meetings: 2nd Tues. 7 to 9 PM 11185 San Pablo Ave., in El Cerrito. Write to P.O. Box 485, Pinole, CA 94564.

CWEST Bay Area Commodore User Group. Meetings: 3rd Thurs. Embarcadero YMCA, between Mission and Howard. Supports C-64/128, Amiga. Write P.O. Box 146731, San Francisco, CA 94114-6731.

AMSTRAD

North American Amstrad Users Group (NAAUG). National User group. For info send S.A.S.E. to NAAUG, P.O. Box 2178, Ferndale, WA 98240.

APL

APLBUG (APL Bay Area Users Group). Meetings: 2nd Mon. I.P. Sharp Offices, 425 Sherman Ave., Ste. 200, 3 blks SW of Caltrain depot.

APPLE

Apple Pickers of the Redwood Empire. Meetings: 2nd Sat. 10 AM Santa Rosa JC, Shuhaw Hall, Rm. 1735. Call for sample newsletter. (707) 763-8322.

A.P.P.L.E. Co-op. Meetings: National User Group. Call-A.P.P.L.E. Magazine. Write: 290 S.W. 43rd Street, Renton, WA 98055. Or call (206) 251-5222 for more info.

Diablo Valley Apple Users. Meetings: 1st & 3rd Fri. 7 PM Willow Creek Ctr., 1026 Mohr Lane, Concord, CA. SIG's meet monthly. Featuring library of pub. domain software & club's DOM's. Newsletter, demos, group buys hard/software.

San Leandro Apple Eaters Users Group, Apple II Users Group. Meetings: 1st Thurs. San Leandro High School, Rm. 213, San Leandro, CA New owners and experienced users welcome. AppleWorks (TAWUG), software & telecommunications SIG's meet monthly. Newsletter.

B.E.A.R. Apple II National Users Group. Meetings: send S.A.S.E. to B.E.A.R., 4719 Meridean Ave. #401,San Jose 95118. Printshop & Appleworks files, monthly newsletter.

Tri Valley Apple II Users Group. Meetings: 1st Thurs. 6:30 PM. Call Esther Farnstrom at (415) 829-3672 or Dan Balsey at (415) 828-6237 for meeting location.

ATARI

ABACUS - Atari Bay Area Computer Users Society. Meetings: 1st Sat. 19th Avenue Diner, 19th & Lincoln Aves., San Francisco, CA. Free meetings open to Atari XL/XE & ST users. With membership $15/yr, comes monthly newsletter, discounts on hardware, etc.

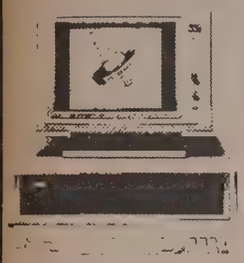
Bay Area Atari Users Group (BAAUG). Meetings: 1st Mon. 7:00 PM Bracher School, corner of Bowers and Chromite, Santa Clara. ST users meet at Bracher on 2nd Tuesdays. 8-bit users meet at H-P, Wolf and Pruneridge, Cupertino. BBS: (408) 247-1257.

Technoland Computer

2960 Gordon Ave., Santa Clara, CA 95051

(408) 732-2244

OPEN 7 DAYS
MON.-FRI. 10-8 PM
SAT.-SUN. 10-5 PM
PRICES SUBJECT TO CHANGE WITHOUT NOTICE
*RAM SURCHARGE MAY BE IMPOSED
Exp (6/9/88)



The Best Priced 16MHz 80386
- Everex EGA Card Deluxe 640/480
- 1 MB on Board Exp. to 2MB
- Parallel & Serial Ports
- WA2 FDD/HDD Controller
- Teac 1.2MB Floppy Drive
- 101 Enhanced Keyboard

$2199

TOWER CASE

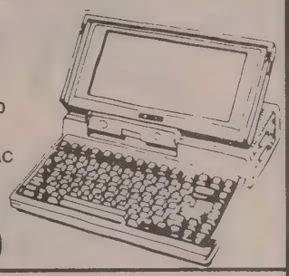
WITH 275W POWER SUPPLY

SALE **$299**

TOSHIBA T1000
- IBM® PC compatibility in less than a 10 lb. package.
- All the power of a desktop PC.
- Fully portable; runs on batteries and AC
- Sharp, clear LCD display.
- Outstanding price and performance.

TOSHIBA T1200 $2495

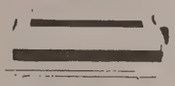
$795



COMPLETE 10 MHz 0 WAIT XT
- 20 MHz 512K on Board
- 360 Floppy Drive
- AT Style Keyboard
- Hi-Res Mono Monitor
- Mono Graphic Printer Card
- 1 Yr. Warranty

$549*

ARC
Wide Carriage Printer
240, 132, 9



$299

Complete 12 MHz 0 Wait AT .$990*

COMPLETE 10 MHz 286 SYSTEM
- 10MHz
- 512K exp. to 1MB, 100NS RAM
- Teac 1.2MB Floppy
- AT Style Keyboard
- HDD/FDD Controller
- HI-RES Monitor w/Graphic Card
- 1 Yr. Warranty Parts/Labor

$895*

NEC P2200
(170,80,24)
$339

NEC P6
(240, 80, 24)
$439

Hewlett Packard
LASER JET II
$1649
cash only

OKIDATA 292
(240, 80, 9)
$455

Sale! Sale! Sale!

Cast 1000 87MB, 28MS
72MB Formated Capacity
- ESDI Drive
- Unbelievably fast transfer rate
- Over 160 times as fast as the miniscribe 3650

$649

THOMSON Ultrascan VGA Monitor Res 800x560	$435
NEC—Multisync II Res 800x560	$585
THOMSON Dualscan 15" Mono Monitor Res 720x348	$99
High Fidelity 1200 Internal Modem	$59
High Fidelity 2400 Internal Modem	$129
Performance Marketing 1200 Pocket Modem	$129
Logitech Bus Mouse Reg. $89	$75

SALE!

Everex 60MB Ext. Archive Tape Backup	$639
Everex 60MB Int. Teac Tape Backup	$519
Everex 40MB Int. Teac Tape Backup	$499

SALE!

Miniscribe 3650 40MB ½ HT	$349
Toshiba 3½" 1.44 MB Kit	$119
Toshiba 3½" 720K Kit	$99

SALE!

EPSON LQ500 24 pin	$369
EPSON LQ2500	829
EPSON LQ850	519
EPSON LQ 1050	719

SALE!

PANASONIC 1595	$439
Everex ST238 Kit	289
Everex 2400 Int. Modem	169
Paradise VGA Plus	275

HARD DISK DRIVE

ST 277R 65MB, 38MS	$479
ST 251 40MB, 38MS	399
ST 4053 Full Height 40MB, 20MS	495

MONITOR

THOMPSON VGA	$435
THOMPSON 15" MONO	99
Nanao 8060S Flexscan	549
Sony 1302	619
Casper EGA	349
Samsung 1252G	79
Quimax 14"	129
19" Mono (1280x960) Monitor & Card	1399

PRINTER

Epson FX86e	$329
Epson EX800	429
Espon FX286e	419
Star NX 1000	189
Panasonic 1080i II	189
Okidata 192 Plus	339
Panasonic 1091 ill	209
Ricoh Daisy Wheel	229

GRAPHIC CARD

NEW! GENOA SUPER VGA
$299

Genoa Super EGA w/Gem	$199
Vega VGA	299
Paradise EGA	179
EGA Wizard/Deluxe	199
Everex VGA Card	259
Everex Monographics 132 col	109
Color Graphic Card	69

THE MOST ECONOMICAL BLUE CHIP!!

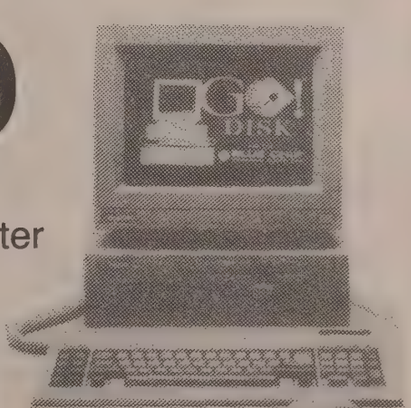
$399

BLUE CHIP ELECTRONICS

COMPLETE XT SYSTEM
- 512K RAM
- 360K Floppy Drive
- 1 Parallel & 1 Serial Port
- 84 Key Keyboard
- 12" Mono Monitor
- 1 Year Warranty
- FREE DOS & GW BASIC

With ARC Printer (240, 132, 9) Package Price

$649



386 20 MHz 0 Wait EGA System $2199

- Western Digital FD/HD Controller
- Teac 1.2 MB Floppy Drive
- 80287 & 80387 Socket
- 1 MB Static RAM on board
- Landmark=27 MHz
- EGA 640x480 on board
- 2 Parallel & 2 Serial on Board
- Maxi-Switch 101 Keyboard

TURBO XT COMPLETE MONO SYSTEM $429

- 4.77/8MHz/256K RAM
- 360K Floppy Drive
- Hi-Res MGP
- AT Style Keyboard (K151L)
- 150W Power Supply
- High Res Mono Monitor
- Floppy Disk Controller (DTK)
- One Year Warranty

10 MHz SYSTEM $449

6/10 MHz 0-WAIT MONO 286 SYSTEM $895

- 512K RAM Exp. to 1MB on Motherboard
- 1.2 MB Teac Drive
- FD/HD Controller
- 200 W Power Supply
- MGP
- AT Style Keyboard (K151L Available)
- High Res Mono Monitor
- One Year Warranty

BABY AT SYSTEMS AVAILABLE

6/12 MHz 286 System $975

Monthly Special

- 14" Paper White Monitor (model QC-1418) with Reverse Mode
- Flat Screen
- Swivel Base
- Universal Power Supply
- One Year Warranty

$119

RELISYS CGA/EGA COLOR MONITOR

Model RE5154

- 14-Inch, Non-Glare Display
- TTL Video Input
- High-Resolution, CGA/EGA Color Monitor
- 64 Display Colors
- 15-Month Warranty on Labor, 24 Months on Parts
- Tilt/Swivel Base

$339

ADD ON BOARDS

Monochrome graphics/Printer Port	$40
Color graphic card/printer port	45
Everex micro enhancer EGA	123
Everex VGA Board	249
Everex Super EGA (800x600)	155
XT floppy controller	22
1.2/360 Floppy Controller	45
RS-232 card	25
AT-I/O card (S/P/G)	55
Multi I/O card (FDD/S/P/G/Clock)	55
Printer card	20
Hard disk controller + cable	65
WD FD/HD Dual Controller	115
DTC RLL Contrlr AT	159
FD/HDD Controller for XT	95
AT Everex 3 MB RAM Card	84
AT MultiFunction Card	105
Memo-576 card (upgrade XT memory)	35

MONITORS

Nanao 8060S (800x600)	$519
Samsung Mono Swivel	$69
Quimax DM-14	125
Samsung Color	235
Relisys 5154	349
NEC Multi-Sync	569

KEYBOARDS

Keytronic 101	$49
K151L (AT Style)	45
BTC 5339 enhanced	49
MCK-101	55
Maxi-Switch 84/101 Key	57/69

DISK DRIVES

Fujitsu 360K/1.2 MB	$69/83
Teac 360K/1.2 MB	75/89
Teac 3.5" Drive (720KB)	89
Mitsubishi 3.5" (1.44 MB)	129
20MB ST-225 Kit	255
30MB ST-238 Kit	279
ST-225	215
ST-238	235
ST-251 (38ms)	389
Micropolis 44MB	CALL
Micropolis 71MB	CALL

PRINTERS

Citizen 120D	$150

MAIN BOARDS

386 20MHz w/1MB/2S/2P/EGA	$1850
4.77/8 MHz Turbo XT motherboard (OK)	70
10MHz Turbo XT motherboard (OK)	80
Full size 6/10 MHz 0 Wait AT M/B (DTK)	255
ELT-286B 8/10 MHz Baby AT M/B	299
Full size 6/12 MHz 0 Wait AT M/B (DTK w/80286-12 CPU)	335

COMPUTER CASE

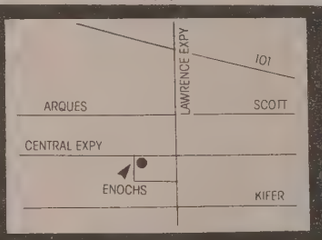
XT Case	$27
AT Jr. Case/XT	32
Tower Case w/275 PS	295
AT Case	54
Baby AT Case	54

MISC.

DOS 3.3	$85
6' printer cable	3.50
Keyboard drawer	29
Computer floor stand	14
Power center	19
Printer switch box (AB/ABCD)	20/29
Logic mouse C7/Bus mouse	69/69
Everex modem 1200/2400	69/169
Keyboard Extension Cable	8
Monitor Extension Cable	8
Joystick (IBM & Apple)	22
Power Supply	CALL

AROMA computer systems

3685 Enochs St.
Santa Clara, CA 95051
Tel. (408) 736-4355 M-F 9-7 Sat 10-4
FAX: (408) 736-4356



The Secret of Great Printing

A high quality ribbon can be the best kept secret to good-looking printing. We use a higher quality ink and more of it. Now—you can have a ribbon that will run smoothly, won't fade, and will last longer. So if you want great printing, get your next ribbon order from us.

Colors Available!
Dealer Inquiries Welcome

"Providing Quality Ribbons For 27 Years"

American Ink Products Co.
630 E. 10th Street, Oakland, CA 94606
(415) 268-0825

AT&T

Bay Area AT&T PC Users Group. Meetings: 1st Wed. 6:30 PM Alternates between Oak. & SF, Call: Joe Mahoney (415) 586-8376. BBS: (415) 829-6027.

Bay Area AT&T PC Users Group - South Bay. Meetings: 2nd Wed. 6:30 PM AT&T Bldg., 1090 E. Duane, Sunnyvale, CA. Call: Joe Lipsig (408) 733-6522. BBS: (408) 462-6329.

AUTOCAD

SF/Marin Autocad Users Group. Meetings: 1st Tues. $20/yr membership, newsletter or call Virginia: (415) 777-4025

Sonoma County Auto CAD Users Group. Call (415) 777-9144 for info.

COMMODORE

Campbell Chapter of 64/More Commodore UG. Meetings: 4th Tues. BBS (408) 946-6154.

Commodore Connection Users Group. BBS (415) 458-1005.

Cupertino Chapter of 64/More Commodore UG. Meetings: 3rd. Sat.BBS (408) 946-6154.

Fairfield Commodore User Group. Meetings: 1st & 3rd Mon. Solano County Education Bldg. Write to P.O. Box 2778, Fairfield, CA 94533-9998 for info.

F.U.N.H.U.G. - Fremont, Union City, Newark, Hayward User Group. Meetings: 3rd Thurs. 7:30 PM Newark Public Library, 6300 Civic Terrace Ave., Newark, CA. A user-organized, user-operated user group not affiliated with any computer or software manufacturer or distributer.

North Valley Chapter of 64/More Commodore UG. Meetings: 2nd. Sat. BBS (408) 946-6154.

PLUG (The Plus/4 Users Group). No regular meetings. Over 800 members internationally. Write to P.O. Box 1001, Monterey, CA 93942 for info.

San Jose Chapter of 64/More Commodore UG. Meetings: 1st. Sun. BBS (408) 946-6154.

Silicon Valley Commodore Club. Meetings: 4th Wed. 7 PM Hewlett-Packard, 5301 Stevens Creek at Lawrence & 280. C-64, C-128, & Amiga.

Commodore 64 Software Users Group For New Commodore Owners. One-on-one help for new owners. Meeting place & time TBA by members. Call (714) 531-2977 for info.

ACCESS (The Amiga And Commodore Computer Enthusiasts Society). Meetings: 3rd Tues. 7:30 PM Community Room of Homestead Savings & Loan, 999 E. Stanley Blvd., Livermore, CA. Contact Ron Kremkow at (415) 449-1784.

CWEST Bay Area Commodore User Group. Meetings: 3rd Thurs. Embarcadero YMCA, between Mission and Howard. Supports C-64/128, Amiga. Write P.O. Box 146731, San Francisco, CA 94114-6731.

dBASE

dBASE Users Group of Marin & Northbay. Meetings: monthly, call (415) 488-0342 for info. Open membership, beginners through developers.

DATAEASE

Bay Area DataEase Users Group. Meetings alternate between San Francisco and Palo Alto. Contact Kermit Carter at (415) 945-7817 for info.

DYNABYTE

Dynabyte - Tahoe City Dynabyte Users Group. Swap, buy/sell - boards, parts, units. Write to Drawer 2629, Olympic Valley, CA 95730 for info.

EAGLE

Eagle Computer Users Group. Meetings: 2nd Sat. 9:30-12 noon Tandem Computer H.R. Training Rm., N. Tantau Ave., Cupertino.

EPSON

Epson Users of San Francisco Bay Area. Meetings: 1st Thurs. 7-10 PM Fort Mason, Bldg. C, Rm. 216, San Francisco, CA. For users of Epson (QX, Equity, PX-8). Presentations, support network, newsletter, public domain software.

Epson Users Group of San Francisco, Inc. Meetings: 1st Thurs. 7 PM Fort Mason. Bldg. C, San Francisco, CA. PD-disks, newsletter, BBS, CPM, TPM, ValDocs, MS-DOS.

FIRST PUBLISHER

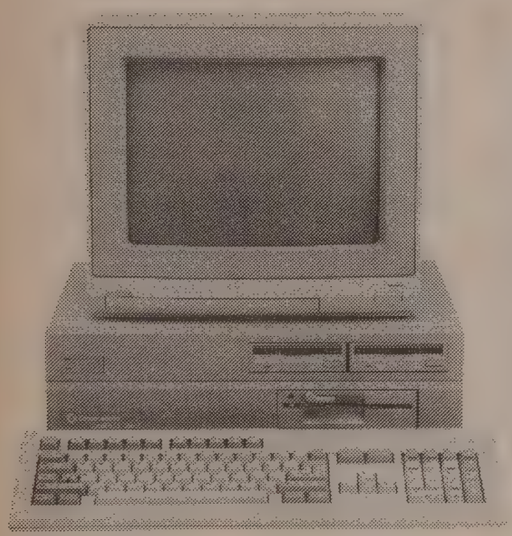
First Publisher User Group. Members make up 8 1/2 x11 formats for newsletters & tip sheets. $35 annual membership. Contact Raul Ibanez (415) 550-0785.

FORTH

Forth Interest Group of Silicon Valley. Meetings: 4th Sat. 1 PM Oak Room, at Hewlett Packard, on Pruneridge in Cupertino. Call George Shaw at (415) 276-5953 for info.

Forth Interest Group, North Bay Chapter. Meetings: 2nd Sat. 1 to 5 PM South Berkeley Community Library, corner of Russell and Martin Luther King Junior Way. One block north of Ashby BART

Before you leap at a Macintosh®, look at what an Amiga® can do.

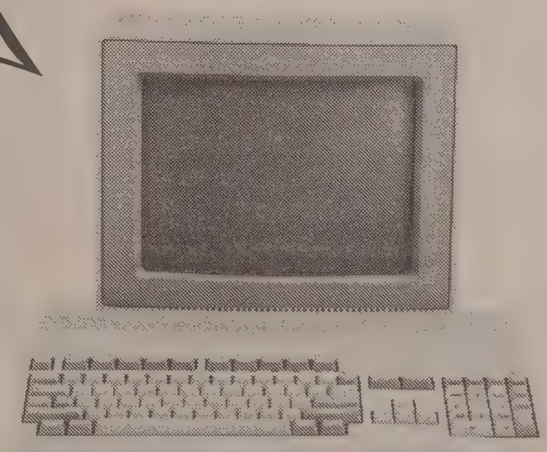


COMMODORE AMIGA™ 2000

Thinking about buying a hot graphics computer to liven up your business presentations? Before you make any costly snap decisions, stop and look at the Commodore® Amiga 2000. It handles advanced graphic design, stunning 3-D animation and pro-quality video effects at about half the cost of a Mac II. And once you've seen an Amiga electronic slideshow in 4096 colors, you'll appreciate how stark and finite the black and white Mac SE can be. So for the high-impact, affordable alternative to a Mac, make your next leap to a Commodore Amiga 2000 dealer.

COMMODORE AMIGA™ 500

Thinking about buying a hot graphics computer for your home? Before you commit to the cold, black and white world of a Mac Plus or Mac SE, you've got to look at the advanced color graphics and computing power of the Commodore® Amiga 500. It's the only home computer that lets you produce home videos with sophisticated animated special effects in 4096 colors. Or play games with graphics so good, they're used in arcades. Or run several programs at the same time. So for the colorful alternative to a Mac, make your next leap to a Commodore Amiga 500 dealer.



Only Amiga Makes It Possible.

Microcomputer Learning Center

558-C Pilgrim Drive
Foster City, CA 94404

(415) 345-6800

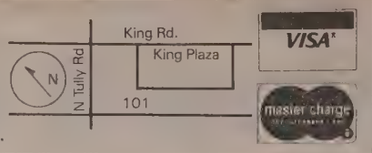
© 1988 Commodore Electronics, Ltd. Commodore is a registered trademark of Commodore Electronics, Ltd. Amiga is a registered trademark and the Amiga logo a trademark of Commodore-Amiga, Inc. Macintosh is a registered trademark of Apple Computer, Inc.

PC-COM

COMPUTER & ACCESSORIES

2515 S. King Rd.
San Jose, CA 95122

FAX & PHONE: (408) 238-1038
Hours M-S 9:30-7PM, Closed Sun.



VISA

master charge

IBM XT/AT Compatible Computers :

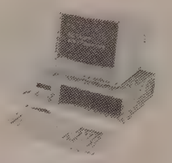
XT-SYSTEM $595: 640K, 4.77/8 MHz, 2 buttons, 3 LED's, keylock, 8 slots, 360K drive, monitor, floppy disk controller, monographic w/ printer port, keyboard, 150W PS, FCC approval

ADD: —$50 for 4.77/10 MHz —$70 for 360K drive —$45 for Multi I/O
—$170 for color —$119 for 3.5 720K drive —$269 for 20 MB + C + labor $20
—$400 for EGA color —$25 for professional KB

AT-286 SYSTEM $950: 640K, 6/10 MHz, 2 buttons, 3 LED's, keylock, 8 slots, 1.2 MB drive, clock calendar, monitor, keyboard, floppy disk controller, monographic w/printer port, 200W PS, FCC approval

ADD: —$100 for 6/12 MHz —$90 for 1 MB RAM —$139 for 3.5 1.4M drive
—$50 for 0-Wait state —$325 for 20 MB hard disk —$700 for Nanao 8060S + Genoa + GEM
—$90 for 1.2 MB drive —$480 for 40 MB hard disk

AT-386 SYSTEM $1995: 1 MB RAM, 16 MHz, 32 bit processor, other are the same configurations as AT-286



Ask For Other Products & Prices

(1 Year labor, 6 months parts for PC-COM systems only)

All Wood Lacquer-Finish Computer Cart

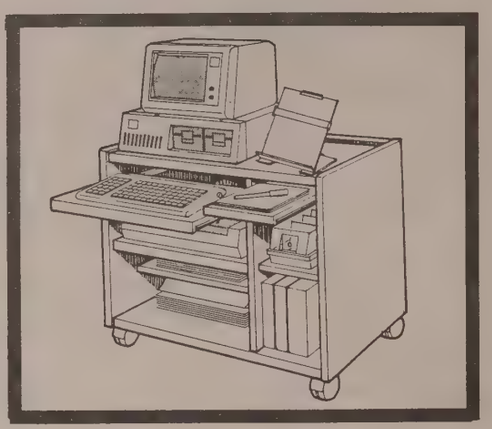
- Functional
- Affordable
- In Stock . . . Call Now!

Right side storage area can be used for CPU

OPEN M-S 9-5:30 WED. TILL 8

ALPHA
FINE COMPUTER FURNITURE

930-0277
2241 N. MAIN-WALNUT CREEK



BEST PRICES FOR ADD-ON CARDS & MOTHERBOARDS

MOTHER BOARD

386 MAIN BOARD (0K) (16 MHz) ..... CALL
TURBO MAIN BOARD (0K) (10 MHz) $85
TURBO MAIN BOARD (0K) (4.77/8 MHz, 2-LAYER) 70
BABY AT MAIN BOARD (0K) (10MHz, 0 WAIT) 275
BABY AT MAIN BOARD (0K) (12MHz, 1 WAIT) 275
AT MAIN BOARD (0K) (10MHz 1 Wait) 255
AT MAIN BOARD (0K) (10MHz 0 Wait) 275
AT MAIN BOARD (0K) (12MHz 0 Wait) 325

XT SERIES

FLOPPY DISK CONTROLLER (2 Port) $19
384K MULTIFUNCTION CARD 65
I/O PLUS II 39
576K RAM CARD (0K) 25
MULTI-I/O CARD 50
RS-232 SERIAL CARD 25
KEYBOARDS/CASES/P. SUPPLY ..... CALL

BUILD YOUR OWN XT/AT/386
CALL FOR PRICES & INFO

AT SERIES

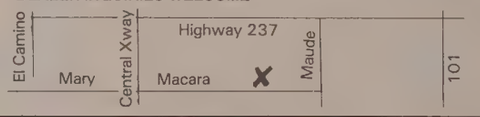
2.5 Mb RAM CARD (0K) W/EMS SOFTWARE $80
3 MB MULTIFUNCTION (0K) W/EMS SOFTWARE 120
AT I/O CARD (S.P.G.) 45

AT/XT SERIES

FLOPPY DISK CONTROLLER (360K/720K/1.2M) $38
CGA/MDA/PRINTER 45
PRINTER CARD 15
MONO/GRAPHIC/PRINTER 45
MGP + FDC (1.2M/360K) 67
EGA + I/O 155
EGA CARD (640x350) w/PRINTER 125
COLOR/MONO/PRINTER 60

DEALER INQUIRIES WELCOME

SUMMIT MICRO DESIGN
479 Macara Ave. Suite 803 Sunnyvale, CA 94086
Tel: (408) 739-6349 Fax: (408) 739-4643
Dealer Inquiries Welcome
2 blocks East of Mary & Central Expway Mon-Fri 9-6 Sat 10-5



WANTED

USED COMPUTERS

Buy Sell Trade Repair

We pay CASH for any quantity of leading manufacturer computers & peripherals.

Call purchasing for your computer appraisal

(415) 968-9818
Ask for Stuart

icb INTERSTATE COMPUTER BANK

station. Contact George Shaw (415) 276-5953.

GAVILAN

Gavilan User Group. Meetings: 2nd Thurs. 7 PM Lockheed Bldg. 162. Cal (408) 379-2774 for info.

IBM AND COMPATIBLES

AI - Expert Systems for Business (ESB). Investigate real business Expert System solutions for PC's. Guest speakers, discussions. Newsletter. $18/yr, $26/yr bus. Call 564-6669 for info.

Diablo Valley CUG. Meetings: 2nd Thurs. 7:30 1331 Concord Ave. For info write: Box 27155, Concord, CA 94527. Or call (415) 932-2413.

IBM Compatible Users Group. Meetings: monthly, call (415) 969-6916 for info 7-10 PM.

IBM & Compatibles Users Group - Ontario Area. Meetings: Call 982-1270 for Info.

Marin-Sonoma PC Users Group (MSPCUG). IBM PC software & talk, business application oriented, official electronic voice of one of most influential groups. Call (415) 927-1216.

Sacramento PC User Group. Meetings: For information call Jackie Janssen at (916) 383-6900.

San Francisco PC Users Group. Monthly meetings, "Blue Notes" magazine BBS (415) 621-2609.

SF PC Jr. Users Group. Meetings: monthly. Lectures & discussions on usage of software & hardware. Software & book library. For more Info, send SASE to 2336 Market St., Suite 20, San Francisco, CA 94114.

Silicon Valley Computer Society. Meetings: 4th Wed. 7:30 PM Oak Room, at Hewlett Packard, on Pruneridge in Cupertino. Call Kent Stafford for info at (408) 286-2969.

Silicon Valley FOG. Meetings: 3rd. Wed. 7:30 PM Saratoga Community Library, 13650 Saratoga Ave.

South Bay AT&T PC UG. Meetings: Call for info. Call (408) 226-0116

South Bay Users Group. Meetings: 2nd Tues. 7:15 Saratoga Library, 13650 Saratoga Ave., STG.

South Bay WordPefect User Group. Meetings: 2nd Thurs. 7 PM Centennial Hall Conven. Ctr., 22292 Foothill Blvd., Hayward, CA. We offer public domain disks, speakers, newsletter.

Valley Computer Club IBM PC Users Group. Meetings: 3rd Wed. 6 PM Xerox Bldg. 475 Oakmead Pky, Sunnyvale, CA. $24/yr member. Monthly VPUG News, access rights to VPUG-SIG Advice on desktop pub. techniques, new products, bugs, etc.

Diablo Valley PC Users Group. Meetings: Walnut Creek, CA. Write: P.O. Box 8040, #117, Walnut Creek, CA 94596.

San Francisco PC Users Group. Meetings: 3rd. Mon. 8 PM Bldg. A, Fort Mason, San Francisco. Over 150 public domain software disks, excellent monthly newsletter. 800+ members, $30/yr.

San Francisco Computer Society. Meetings: 1st Mon. 7:00 PM. Homestead S&L, 5757 Geary Blvd., San Francisco. MS-DOS machines, Osborne, Kaypro, Morrow. Call Ralph Gallagher 929-0252.

CUE Club. MS-DOS machines. SIGs for other computers. BBS:(209) 239-9853. For more info call (209) 858-4401.

KAYPRO

San Francisco Computer Society. Meetings: 1st Mon. 7:00 PM. Homestead S&L, 5757 Geary Blvd., San Francisco. MS-DOS machines, Osborne, Kaypro, Morrow. Call Ralph Gallagher 929-0252.

MACINTOSH

Tri-Valley Macintosh Users Group (TMUG). Meetings: 2nd Fri. 8 PM Chabot College, Rm. 600, 25555 Hesperian Blvd., Hayward, CA. Access to a variety of pub. domain software, education modules "problem solving" peripheral committee.

Berkeley Macintosh User Group (BMUG). Meetings: every Thurs. 6 PM Physical Sciences Lecture Hall, UC Berkeley Campus. SIG meetings on Mondays, Tuesdays & Wednesdays. Call for this week's topic. (415) 849-9114. BMUG, 1442A Walnut St., #62, Berkeley, CA 94709.

Diablo Valley Apple Users. Meetings: 1st & 3rd Fri. 7 PM Willow Creek Ctr., 1026 Mohr Lane, Concord, CA. SIG's meet monthly. Featuring library of pub. domain software & club's DOM's. Newsletter, demos, group buys hard/software.

MacCruisers — Santa Cruz. Meetings: 2nd Wed. Jade Street Community Ctr. at 45th Ave., Capitola, CA.

MacNexus — Sacramento's Macintosh Users Group. Meetings: 3rd Thurs. 6:30 PM Call (916) 446-2411 for info. 350 members, but still informal. Extensive public domain collection.

72 Hrs Quality Burn-in

TransComputer

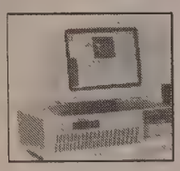
MADE IN U.S.A.
Since 1985

1Year Parts & Labor Warranty Service

State-of-the-Art High-Performance TransComputer 286 & 386

286-12
(16MHz System Throughput: 80ns)

$850



16-bit 80286-12 microprocessor
Zero-wait state memory access
Landmark SI = 16.1MHz
Norton SI = 15.3
Certified Phoenix BIOS
Memory expandable to 640K or 1MB
Full size motherboard with 8 I/O slots
Dual hard/floppy disk controller
1.2MB floppy disk drive
Enhanced workstation keyboard
FCC class B certified system enclosure
MS DOS 3.3 with GW Basic
Hard-cover user's manual
Complete with utility software
Packaged in a protective shipping box

(Add $306 for 512KB, $375 for 640KB)

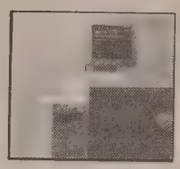
w/ 20MB hard disk ... $1140
w/ 42MB hard disk ... $1240

286-10 $790
(13.2MHz System Throughput: 100ns)

same as 286-12 configuration with 10MHz
(add $288 for 512K, $355 for 640KB)

286-16
(21MHz System Throughput: 60ns)

$990
(Add $290 for tower case as shown)



16-bit 80286-16 microprocessor
Interleaved zero-wait state memory access
Designed with Chips&Tech's NEAT chipset
Built-in EMS 4.0 capability
Memory expandable to 8MB on-board
Re-programmable CPU and I/O bus speed
Landmark SI = 21.4 MHz
Norton SI = 18.9
Certified AMI BIOS
Dual hard/floppy disk controller
1.2MB floppy disk drive
Enhanced workstation keyboard
FCC certified system enclosure
Detailed technical reference manual

(Add $125 for each 256KB SIP memory module)

w/ 20MB hard disk ... $1280
w/ 42MB hard disk ... $1380

Hard Disk Options:

20MB (3-1/2", 28ms): $325
30MB (RLL, 65ms): $289
42MB (28ms): $525
65MB (RLL, 38ms): $550
80MB (28ms): $750
147MB (ESDI, 23ms): $1825
320MB (ESDI, 18ms): $3700

Peripheral Options:

Internal 1200 baud MODEM: $95
Internal 2400 baud MODEM: $195
2.5MB AT EMS board w/ software: $125
Opto-Mouse w/ PC paint: $99

(Printers from EPSON, ALPS, C.Itoh, Data Products, Fujitsu, Panasonic, Star, HP and Seikosha: CALL for the BEST Pricing !)

Monitor Options:

12" Amber Monitor w/ MGP ... $160
14" Hires amber w/ MGP ... $185
14" EGA monitor w/ EGA card ... $535
14" .28DPI HiRes NANOA-S Monitor ... $590

Special VGA Offer !

14" Multi-Sync VGA/ NANOA monitor with tilt & swivel base and HiRES VGA controller (800X600) with VGA analog interface adapter cable.

Only $799 List: $1200

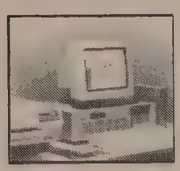
TransComputer 386-16/20MHz CAD/CAE Desktop Publishing

386-16

$1950

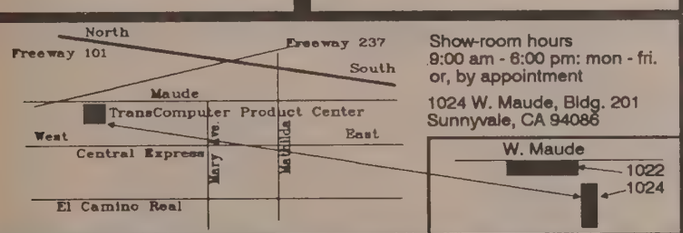
32-bit 80386-16 microprocessor
100ns interleave memory access
1MB expandable to 32-bit 10MB (100ns)
Real-time system throughput 21.4MHz
Norton SI = 18.9
Software switchable to 8, 10, and 16 Mhz
Optional 80387 math-coprocessor
Certified Phoenix 386 BIOS
2 serial and 1 parallel I/O port
1.2MB floppy disk drive w/ controller
Enhanced workstation keyboard
Technical reference manual

386-20



$2250

32-bit 80386 microprocessor at 20MHz
80ns interleaved memory access
1MB expandable to 32-bit 10MB (80ns)
Real-time system throughput 28MHz
Norton SI = 23
Software switchable to 8, 10, and 20 Mhz
Optional 80387 math-coprocessor
Certified Phoenix 386 BIOS
2 serial and 1 parallel I/O port
1.2MB floppy disk drive w/ controller
Enhanced workstation keyboard
Technical reference manual



Show-room hours
9:00 am - 6:00 pm: mon - fri.
or, by appointment

1024 W. Maude, Bldg. 201
Sunnyvale, CA 94086

386-CAD/CAE Special

Only $3950 !

1 386-16 TransComputer
- 1MB zero-wait static column memory
- 1:1 Interleave hard disk access controller (3 times faster access than 1:3 interleave)
- 42MB super fast hard disk drive
- 2 serial & 1 parallel port
- Math coprocessor (80387-16) ←
- 1.2MB floppy disk drive
- Optical Mouse

+

2 HiRES VGA Monitor
- 14" Multi-sync VGA NANOA monitor
- 800x600 HiRES-VGA controller
- Analog VGA adapter cable

386-20 Super System
same as above + 80387-20 chip

3.5MIPS for only **$4500.oo**

Desktop Publishing
QUAD-Package Offer !

1 1.5MB CrystalJET Printer
- HP LaserJET Interface with 300X300 DPI
- NEW Liquid Crystal Technology (fewer replacement parts than Laser)
- Three resident fonts with 7 optional fonts
- 33% faster print out than HP LaserJet II.

+

2 Super 286-16 Computer
- 21MHz of system throughput
- 1MB 80ns SIP memory module
- 42MB fast hard disk drive
- Optical Mouse

+

3 WYSIWYG Monitor
- What-You-See-Is-What-You-Get
- 15" 1280X800 HiRes monitor with controller

+

4 Ventura or Page Maker
- Choice of Ventura or Page Maker Software

Only $4995 !

Special Sale

10.7MB Floppy Drive

* compatible w/ 360K & 1.2MB *

Sale: $690 list: $950
(add $190 for SCSI controller)

TransComputer Direct Marketing Group: (408) 245-9606

Solving Technology with Excellence...

Tech Support Hot Line: (408) 245-9603
1 year parts & labor warranty on TransComputer products.

Corporate purchasing: We provide FREE 30 days on-site maintenance service & net terms to qualified accounts.

OEMs & Dealers: Ask us about our customized manufacturing service !

Pricing and system configurations are subject to availability (above pricing is based on cash & carry price)

EFI'S
Discount Computers

Complete systems from:

AST RESEARCH INC. · WYSE · ZENITH · AT&T · IBM · COMPAQ · TOSHIBA · NEC · NCR · SAMSUNG · EVEREX · SPERRY · SHARP

XT/AT 386 CLONES

SOFTWARE

Lotus 1-2-3	299
Word Perfect	209
dBase III+	389
Ventura	489
Paradox II	435
Norton Utilities/Advance	59/85
Turbo C	63
X-Tree	49
FastBack	99
Desqview	69
Generic CADD	59
PageMaker	419
Simple Database	299
Quattro	$CALL
MS Word	225
Smart w/Spellchecker	479

DISK DRIVES

20/30 MB w/contr.	299/329
Half ht./Full ht. drives	$CALL
Plus 20/40 MB Hard Card	569/719
Archive 40MB tape BU	355
WD file card 20/30MB	399/429
40 MB half ht./Full ht.	429/559
Bernoulli Boxes	$CALL

SUPPLIES

3M DS/DD Diskettes	8.95
Dysan Hi Dens	19.95
Ribbons/Chips/Paper	$CALL

HARDWARE

Vega Deluxe/VGA	209/299
Paradise EGA/EGA 480	149/175
Genoa 800 x 600	229
Six Pak 384K	219
AST Advantage 128K	239
Intel Above PC/AT	255/379
Orchid Tiny/286E	295/739
Hayes modems	$CALL
Everex 1200B Modem	89
Hercules color/mono	$CALL
Generic mono/color/EGA	89/159
8087/80287	115/179
Intel PC 386	835
MS bus/serial mouse	105

PRINTERS

Citizen 120 D/Premier 35	169/469
HP Series II w/toner	$1745
NCR, Canon, Quad Laser	$CALL
Automatic Printer Switch	69
Epson, Toshiba, Brother, NEC, Primages, Diablo, ALPS	
Okidata, RCA, Panasonic	$CALL

MONITORS

Sony/Mitsubishi	$CALL
Amdek 410A/722	149/469
NEC Multisync/+	619/999
Samsung Amber/EGA	85/379
Magnavox CGA/EGA	279/379

Free delivery and installation of systems within 30 miles.
Free in-store installation of any product.
Prices reflect 3% cash discount.

CALL US FOR YOUR PRICE ON ANY PRODUCT.
HOURS: MON.-FRI. 10-6, SAT. 10-2
3441 GOLDEN GATE WAY, LAFAYETTE, CA 94549

(415) 283-1700
CALL BEFORE YOU BUY

Prices may change without notice 90 day warrants on all products

MasterCard · DISCOVER · VISA

Clearance Sale!

Systems

IBM PS/2 Model 25, 1 Floppy	$965*
IBM PS/2 Model 30, 2 Floppies/20 MB	$1174*/1699*
IBM PS/2 Model 50, 20 MB	$2495*
IBM PS/2 Model 80, 40 MB	$4295*

*Monitor Not Included

Printers

Epson LX 800	$199
Epson FX286E	$475
Epson LQ500	$369
HP LaserJet Series II	$1695
HP DeskJet	$785

MicroAge®

5690 Stoneridge Dr.
Hacienda Business Park
Pleasanton, CA 94566
(415) 463-2263

Open: Mon-Fri 10 to 6
Saturday 10 to 5

TI-West. Meetings: 4th Wed. 7 PM 4637 Chabot Dr., Rm. 107, Hacienda Business Park, Pleasanton. Newsletter, large P/D library. Contact James (eves) (415) 462-7536.

Christian Macintosh User Group, Silicon Valley Chapter. Meetings: 1st Thurs. San Jose. Newsletter and support available. Contact Rick Thrasher at (408) 437-1913.

Christian Macintosh User Group, San Francisco Chapter. Meetings: 2nd Thurs. S. F. Newsletter and support available. Contact Rick Thrasher at (408) 437-1913. Bible Study and DTP SIGS.

East Bay Macintosh Users Group (EBMUG). Meetings: 3rd Tues. West Berkeley Library, 1125 University Ave., Berkeley. Members recieve free PD software. Bring blank disk. Write: P.O Box 7816 Berkeley, CA 94707-0816.

MICROSOFT

Mirosoft Word SIG of the SVCS. Meetings: 4th Mon. 7:30 PM Hewlett—Packard, Oak Room, Pruneridge at Wolfe, Cupertino. Contact Bill West (408) 356-8805 or Hunter Jackson (4080 446- 4097.

MORROW

BAMDUA (Bay Area Micro Decision Users Assoc.). Meetings: 3rd Tues. 7:30 PM Albany Senior Center,846 Masonic Street (just north of Solano) in Albany, CA. Voice:(415) 534-4257. BBS:(415) 654-3882. P.O. Box 5152 Berkeley CA 94705.

San Francisco Computer Society. Meetings: 1st Mon. 7:00 PM. Homestead S&L, 5757 Geary Blvd., San Francisco. MS-DOS machines, Osborne, Kaypro, Morrow. Call Ralph Gallagher 929-0252.

NEC

Bay Area NEC/100 Users Group. Meetings: 1st and 3rd Thur. 7:30 PM Room 209C at College of Alameda. For those interested in laptops, especially Kyocera 80C85 type (NEC 8201a, Radio Shack Model 100 or 102. Call (415) 658-1889.

NOVELL

Novell Users Group - Silicon Valley. Meetings: 3rd. Wed. 7 PM 1170 Morse Ave., Sunnyvale, CA.

ORACLE

Northern California Oracle UG. Meetings: Call (408) 738- 8330 for info. meets every 3 months at different Bay Area locations. Newsletter published between meetings.

OSBORNE

San Francisco Computer Society. Meetings: 1st Mon. 7:00 PM. Homestead S&L, 5757 Geary Blvd., San Francisco. MS-DOS machines, Osborne, Kaypro, Morrow. Call Ralph Gallagher 929-0252.

PLUS/4

PLUG (The Plus/4 Users Group). No regular meetings. Over 800 members internationally.

TANDY/ RADIO SHACK

Tandy 1000 (The Mug). Mail-based user group w/ monthly newsletter. Not for PC jrs. Members communicate through newsletter. $8/yr. fee; checks to: Daniel Tuma, 30 Arjang Ct., Alamo, CA 94507-2041.

BYTE Bandits of America. Meetings: Campbell. Call (408) 379-2774 for info.

Model 100, 102 & 200 Support. Meetings: Int'l support by mail, voice & BBS. Free on-line weekly news letter. Write Club 100 984 Hawthorne Dr., Walnut Creek, CA 94596. Or call (415) 937-5039.

TRS Nybblers. Meetings: 2nd Fri. 8 PM Chabot College, 25555 Hesperian Blvd., Hayward. MS-DOS, CP/M, laptops, Mod 1, 3, 4, Mod 2, 12, 16, 6000. Bud Gallagher (415) 522-5960 or Bruce Jarvis (415) 846-3575.

REVELATION

Bay Area Revelation UG. Meetings: 1st Tues. Call (415) 759-1210.

SANYO

Sanyo PC Hackers. Meetings: 1st Wed. 7 PM Mercury Room, Mercury Savings & Loan, 99 El Camino Real, Menlo Park.

SOLOMON

Solomon User Group of Silicon Valley. Meetings: For info contact Grihalva Associates, 39899 Balentine Dr., Suite 175, Newark CA 94560.

San Francisco Solomon III Users Group. Meetings: last Wed.,odd months 6-9 PM Price Waterhouse, 555 California St. 36th Fl., S. F. Annual membership - $50; corp. membership - $75.

S—100

S—100 Business Users Group. Meetings: 4th Tues. 7:30 PM Santa Clara Univ., Rm. 101, Bannan Engineering Bldg. CP/M & MS-DOS libraries. BBS: (408) 262-5150, 8-N-1,2400/1200/300.

TEXAS INSTRUMENTS

Brea 99'ers Users Group. Meetings: 1st Mon. 7:30 PM Mercury Savings, La Habra, CA.

Thousand Oaks Personal Computer Club (TOPCC). Meetings: monthly. Call: (714) 686-0336.

TIMEX/SINCLAIR

Timex/Sinclair Users of Silicon Valley (GUTS/SV). Meetings: each Sat. 9 AM Stanford Univ., Jordan Hall (quadrangle), Math Bldg. RM 380C. SW library & newsletter. For topic check PDSE BBS in Sunnyvale (408) 735-7390, 300/1200, 8-N-1, 24 hrs.

VENTURA PUBLISHER

VPUG (Ventura Publisher User Group). Meetings: 3rd. Mon. 6:30 PM Fort Mason, Bldg. A., Rm. 5 San Francisco, CA.

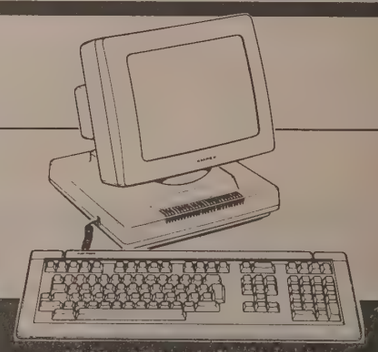
AMPEX 220 and 230 PLUS

220
- DEC VT220 compatible
- 14" nonglare amber, green or white flat screen
- Tilt and swivel display
- 7 x 11 dot matrix in 9 x 12 field
- 80 or 132 column display
- Bold, blink, underline, reverse video
- Two-year warranty

Call for Price

230 PLUS
- 14" nonglare amber, green or white flat screen
- 132 or 80 column display
- Extra fast screen refresh/dynamic focus
- Four 80 column display pages standard
- 16 programmable function keys
- Emulations - ADDS, Hazeltine, Televideo and Wyse
- 7 x 11 dot matrix in 9 x 12 field

Call for Price



Cypress Distributing Company®

560 Lincoln Avenue
San Jose, CA 95126
(408) 297-9800

22186 Rim Pointe
El Torro, CA 92630
(714) 770-7244

2670 Truxel Road
Sacramento, CA 95833
(916) 646-1955

10 Net Datasouth Indtech
C. Itoh Century Data Systems Packard Bell
Personal Computer Products Panasonic Seikosha Fujitsu
Monitorm Star Micronics Mitsubishi Rutishauser Canon

IBM • HP • SONY

QUALITY DISTRIBUTORS Invites You To Have It Your Way!

Desktop Publishing Solutions to Fit Your Taste

NEW FROM

TOSHIBA

T5100 & T3200
In Stock for Pick Up Today

- 386 Intel
- 40 MB HD
- 2 MB RAM
- EGA Plasma
- 286 Intel
- 2 Expansion Slots (IBM)
- 40 MB HD

Best Prices

INTRODUCING THE AST PREMIUM/386

INPUT

SCANNERS
Princeton Graphic	$695
HP Scan Jet	$1275
Microtek 300A	$CALL
Deskjet	$699

MICE
Logi Tech Mouse C7	$65
Logi Tech Mouse (Bus)	$99
Genius Mouse	$49
Microsoft	$90

PLOTTERS & DIGITIZERS
Hitachi 11 x 11 Tablet	$470
Roland DXY-980	$1270
Summasketch 1201	$399
Kurta	$CALL

INTEL CHIPS
80387-20	$725
80387-16	$475
80287-10	$299
80287-8	$245

OUTPUT

LASER PRINTERS
HP Laser Jet II	$1625
HP 1 Meg	$349
HP Toner	$89
Tray & Fonts	$CALL
Destiny Laser Act I 1.5MB	$1595

SOFTWARE

ALDUS Pagemaker $479

XEROX Ventura Publisher $479

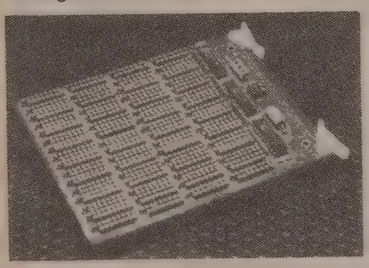
CPU

COMPUTERS
386-20/60MB	$5395
386-20/130MB	$6799
386-20/300MB	$9449
Portable 386-40	$5470
Portable 386-100	$6995
286 Model 1	$1699
PS/2 Model 30, 2-3½"	$1199
PS/2 Mod. 30, 20MB	$1695
PS/2 Mod. 50, 20MB	$2649
PS/2 Mod. 60, 44MB	$3729
PS/2 Mod. 80, 40MB	$4799
8503	$178
8513	$499
8512	$418
286 Model 80	$CALL
Model 120	$CALL
Model 140	$CALL
Model 170	$CALL
AST 386	$BEST

PRINTERS
EPSON
FX 286E/86E	$401/340
LQ 500/850/1050/2500	$399/545/659/899
Citizen 55/45	$509/469
IBM ProPrinter II/X24	$379/589
Ribbons for all printers	$CALL
Toshiba 321SL/341SL	$489/699
Toshiba 351C/351SX	$1199/1099

SOFTWARE Lotus™
Lotus 1-2-3/Symphony	$299/399
dBase III Plus	$365
WordPerfect 4.2	$205
IBM PC DOS 3.3/MS DOS 3.3	$92/86
PC DOS Single user/Multi	$169/512

SPECIALS ONLY FROM QMD
Pacific Data Memory Boards for HP LJ II
0K	$189
1 Meg	$299
2 Meg	$699
4 Meg	$1299



SPECIALS

QD XT
- 20 MB HD • 640KB
- 360 KB Floppy
- Mono Card/Par Port
- Amber Monitor

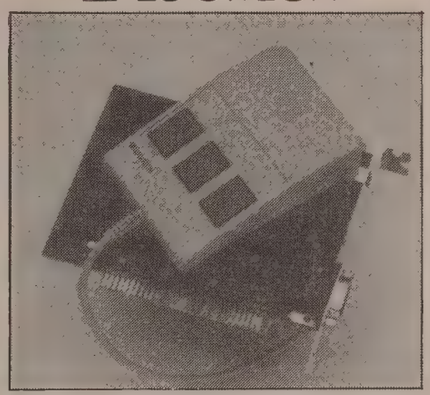
$899

QD 286
- 10 MHz • Honeywell Keyboard • 1.2 Floppy Drive • 640KB RAM • Mono Card
- Amber Monitor

$1099

Genoa Super EGA $189

SPECIAL OF THE MONTH
LOGITECH



Logitech Mouse w/EGA $199
LogiCadd $CALL
Paintshow $CALL

TAPE BACK UP SYSTEMS
Archive 125 MB	$795
Archive XL40 40MB Internal	$335
Archive ST600 60MB Internal	$499

FAX SPECIALS
Sharp FO150/FO300	$1249/CALL
Microtek FAX board	$699

LAP TOP COMPUTERS
NEC ZENITH TOSHIBA
Toshiba 1000/T3100-20	$699/2995
NEC Multispeed-EL/HD	$1595/2369
Zenith 183/93	$2299

HARD DISK DRIVES Seagate
Seagate ST225 20 MB w/control	$259
Seagate ST238 30MB w/control	$299
Seagate ST251 40MB AT	$399
Seagate ST 4096	$645
Miniscribe 6053 44 Meg AT	$575
Miniscribe 6085 71 Meg AT	$799
Miniscribe 40 MB 3650	$333
Maxtor 114C 140 Meg	$1795
Plus Hardcard 20MB/40MB	$525/679

POLICIES:

- We accept certified checks, cashier checks, wired funds
- All orders over $500 must be paid by cashier check.
- Minimum order $100.
- Allow 1 week for personal & company checks (maximum amount $500)
- Prepaid orders get 1% discount
- Add 3% for Visa/Master Card Purchases
- Allow one week for shipping
- 15% Restocking Fee On all return merchandise
- Customer pays return merchandise shipping
- All prices subject to change without notice
- Some prices are quantity.
- Orders over $10,000/month get 1% discount
- Saturday orders get free shipping
- HP is a registered trademark of Hewlett Packard. AST is a registered trademark of AST. Compaq is a registered trademark of Compaq. IBM is a registered trademark of International Business Machines.

QUALITY DISTRIBUTORS

VISA

(213) 478-9811

1-800-MICRO 86 (642-7686) in U.S.

West Coast Office 11651 W. Pico Blvd., Los Angeles, CA 90064

For Technical Services Call **(213) 478-8819**

QUANTITY PRICES AVAILABLE

FAX (213) 312-5065

TOSHIBA • MINISCRIBE • ZENITH • LOTUS • ISE

COMPAQ • NEC • AST • INTEL • EPSON • TEAC • SEAGATE

IRWIN • ARCHIVE • MINISCRIBE • KURTA

SATURDAY, JUNE 11

COMPUTER BARGAIN SHOW

BAY AREA Computer Swap

EVERY ITEM ON DISPLAY IS AVAILABLE FOR IMMEDIATE PURCHASE AT BARGAIN PRICES

SANTA CLARA COUNTY FAIRGROUNDS

Take Hwy. 101 to San Jose, Exit on Tully Road West to 344 TULLY ROAD, SAN JOSE

Admission $5 Children Under 12 FREE Sat. 10 a.m. - 5 p.m. For Info. Call 415-340-9113

A MICROSHOWS PRODUCTION

ZCOMM AND ZMODEM

continued from page 106

file transfer procedures. The pB switch can be used to increase or decrease the default block size for data transmission dependent on your or the host's capabilities. There are special overthruster and check removing parameters which further speed up transfers on systems whose transmission eccentricities are known. Timeout intervals, handshake, wait for keystroke, date stamping, filepath and transmission of error codes to DOS are all user selectable. DTR (Data Terminal Ready) can be enabled or disabled upon transfer completion. Carrier dropout monitoring can be disabled for modems which don't handle it properly. (If your modem doesn't carry the Hayes S-Register commands a lower case "d" should be added to your initial switches); **DSZ Port n Speed n d t rz** should allow any difficult modem to come on line and receive files).

Background Operation

The *DSZ* module includes several loader files for use with *DESQview*. In *DESQview*, once my initial dialing was completed with *Procomm+*, I found it convenient to close *Procomm+* and open a *DSZ* window for the remainder of a session. *DSZ* takes only 66K and is (save for *ZCOMM* and *PRO-YAM*) the most reliable background transfer system on the market. If your foreground application puts heavy demands on your CPU, you can work and watch *DSZ* adjust the data transmission rate in the background window. Your transfer won't abort because of timeouts or buffer overflow.

If you see *DSZ* on a BBS system, you will probably see versions uploaded on several different recent dates. Chuck Forsberg is a perfectionist, always tinkering with his source code, trying to increase performance. Versions dated no later than February 22, 1988 will work with most clones and compatibles. Versions dated after 2/22/88 have substantial code revisions in how the data buffer works and may not do crash recovery unless the registration software is added to the module. There will probably be a newer, improved version out by the time you read this. "We are all beta-testing ZMODEM all the time," is how his unregistered users tend to look at it. For $20 you can become a registered user and make all future versions completely functional as soon as you download them. (*ZCOMM, PRO-YAM, DSZ* from Chuck Forsberg, Omen Technology, Incorporated, 17505-V Northwest Sauvie Island Road, Portland, Oregon 97231, CompuServe: 70007, 2304, GENIE: CAF — Tele-Godzilla BBS: 503-621-3746.) □

Copyright © 1988 by Lenny Bailes. All rights reserved.

Apple	Cash	MC/Visa
Mac Plus	$1249	$1279
Mac SE	1949	1999
Mac SE 20M	2499	2559
Mac II 1 Dr	2599	2679
IIGS, RGB, 1Dr	1349	1389
Computers (CPU Only)		
Leading Edge 1 Dr	$619	$636
Leading Edge 2 Dr	699	715
Leading Edge 20M	949	979
Hyundai XT 2Dr	779	799
Hyundai XT 20M	949	979
Hyundai AT 1Dr	1099	1129
Hyundai AT 20M	1449	1485
Equity 1+ 2Dr	799	821
Equity 2+ 20M	1399	1435

Laser Printers	Cash	MC/Visa
AST Turbo	$2999	$3091
HP Laser II	1649	1699
General Comp	1499	1549
Epson Printers		
FX 86e	$349	$359
FX 286e	399	411
LQ500	369	380
LQ850	549	566
LQ1050	759	782
EX800	449	462
EX1000	549	565

Call for Store Nearest You

415-465-2488

Prices expire 5/16/88. Prices with this ad only.

Streets On A Disk

Business and Personal Mapping System

STREETS offers you much more than any ordinary map. By merely pointing with a mouse or cursor keys, you can use your computer to plan your next trip. **STREETS** will automatically display and print maps, travel directions, calculate distance, mileage, travel time, and fuel requirements.

With **STREETS**, you can display all of your business contacts on the map along with name, address, phone number or any text information.

Designed for use on a PC, AT, 386, and compatibles, **STREETS** is ideal for salesmen, dispatchers, travel agents, and motorists everywhere.

ONLY $99.95 (including a choice of city maps)

Add $5.00 shipping and handling. California residents add 6% tax.

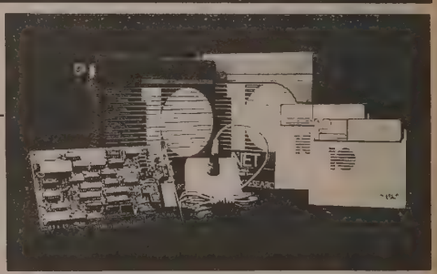
Call (805) 583-1029

Klynas Engineering, Box 499, Simi Valley, CA 93062

10-NET Local Area Network System

- Bus topology/Star topology
- Speed : 1.0 million bits per second
- No dedicated server required
- Share most hardware devices
- Full sharing of application software
- File and record level locking
- Ethernet compliance
- Software release version 3.2
- Easy installation
- PC plug-in circuit board, tap box, cable
- Distance up to 2000 feet between repeaters
- Maximum bus distance: 10,000 feet
- Electronic mail, calendar, bulletin board
- Printer spooling, network diagnostics
- CHAT - simple user message system
- CB - multiple user dialog system

Call for Price



Cypress Distributing Company

560 Lincoln Avenue, San Jose, CA 95126, (408) 297-9800

22186 Rim Pointe, El Torro, CA 92630, (714) 770-7244

2670 Truxel Road, Sacramento, CA 95833, (916) 646-1955

Ampex Datasouth Indtech C. Itoh Century Data Systems Packard Bell Personal Computer Products Panasonic Seikosha Fujitsu Monitorm Star Micronics Mitsubishi Rutishauser Canon

Desktop Publishers!

Do You?

	YES	NO
Use a Linotronic Service?		
Use a Copy/Duplication Service?		
Want to Save Money Producing Your Work?		
Want to Save Time Producing Your Work?		

If you answered YES to Two or more of these questions then you should use

JET

What is JET?

Simply put, JET is a hassle free way to have your desktop published documents typeset and duplicated. JET is Faster, Less Expensive, and more convenient than using a walk-in service bureau or other competing bureau service. The JET system allows you to eliminate all travel costs and time involved in producing your work.

What does JET save me?

JET saves you both time and money in several ways. Our research has shown that JET can save you as much as $69.00 per page produced. JET saves you by:

- Eliminating all travel time to and from typesetting and duplication shops, all owing you to work on more productive things than fighting traffic.
- Giving you a single source for your typesetting, copying, equipment purchase and repair, and training.
- Giving you control over when your work is done, and how it's delivered.
- Saving you the expense of renting equipment you already own.
- Recovering business you might otherwise not be able to handle.
- Getting more value and use from your existing desktop publishing.

What do I need to use JET?

JET is simple and easy to use. All you need is your existing Desktop Publishing System, a modem, a desire to save time and money, and your JET software kit.

But I don't understand modems.

That's OK. JET is designed, like the Macintosh., to be easy to use. You don't have to do anything more than press a couple of buttons on the screen to operate JET. In fact we'll install JET and provide you with initial training if you want. You concentrate on your work, not on the computer.

I don't know how much work I'd need.

Our experience has shown that once you start using JET you very quickly find that it becomes a necessary part of your business. We offer a variety of membership plans that make it easy for you to take advantage of JET, regardless of your budget.

What else can Julian do for me?

Julian Systems expert staff of specialists, many with professional backgrounds in the fields of graphic design and printing, can assist you in optimizing your existing or new desktop publishing system. Whether it's a network or a system enhancement, a Julian Specialist can provide you with truly knowledgable assistance, backed by a company with years of Macintosh Specific experience. So try Julian Systems when you're buying your publishing system and get a COMPLETE SOLUTION.

JULIAN SYSTEMS, INC.
415/686-4400

Authorized
Value Added Reseller

Apple logo and Macintosh are registered trademarks of Apple Computer Inc. JET, JET Logo, and Bar J logo are trademarks of Julian Systems Inc

CLASSIFIEDS

BULLETIN BOARDS

IBM SOFTWARE ONLY $1.09 PER DISK

For FREE 16 page catalogue call The Pacific Exchange 24 hr. Software Hotlines: Voice: **(408) 946-3663** Modem: **(408) 946-8561** SATISFACTION GUARANTEED

EMPLOYMENT OFFERED

INNOVATIVE ANIMATION PROJECT CONTRACT; full/part time, possibly long term, Berkeley, Call Brad Smith (415) 524-1938.

AutoCAD Maniac? Computer Hacker Extraordinary? Could you qualify for the Autodesk Product Support Team? Send Resume to: Autodesk, Inc., Personnel #MT, 2320 Marinship Way, Sausalito, CA 94965.

HARDWARE FOR SALE

NEW — TARGA FILMPRINTER TRUEVISION/POLAROID filmprinter with 35mm, autofilm, and overhead transparency camera backs. Works with VDA/D, ICB, TARGA series—List price $3346—will sell for $1997, includes free instant slide system, free carry case, and film. Call Herb (415) 435-6620.

BLUE CHIP MONITOR, — green, with Monographics board. Used only 2 mos. $75.00 (415) 489-6049.

IBM 386 AT CLONE —20 Mhz 65 MB EGA Business System $2650 (408) 988-2208.

Turbo XT AT Keyboard, Color monitor, printer package $900/b.o. Must sell. (408) 255-0751.

HARDWARE FOR SALE

PCJR Accessories second drive, memory expansion, mouse, modems, joy sticks and more. Pick up or mail order. Phone (415) 431-8399.

PRINTERS—IDS MICROPRISM-480 Dot Matrix $150(b/o), Qume Daisy Wheel/Tractor Feeder $400(b/o), (415)648-0374.

Northstar Horizon, 2 floppy drives, wood case, no terminal, excellent condition. Bruce, (415) 658-9545, leave message.

Logic Analyzer: Tektronix DAS 9122, 48 Lines Acquisition, 16 Lines Generation, Glitch Latch Data Tape Storage, $21K (415)654-6901.

Zenith Z-181 1200B internal modem —for Zenith 181 Laptop; $49. (415) 849-2675.

256K Apple II and Monitor III, Internal Drive. Free software with purchase $300.00 (415) 638-8902. Hurry!

Radio Shack 16B Computer, incl. 2nd terminal (7 Terminal Cap.) 35 MEG Hard Disk; Also 16A Computer for parts. Best offer takes all. (415) 944-9397.

WANT CLONE. Have II-C. Amdek/XDD/Scribe/Modem/Mouse/more. $1495. Call Paul (408) 479-1244.

SERVICES

Computer Mailing Lists Computer dealers, user groups, publications, end users and more. Send for free catalog. Buffalo Enterprises, Po Box 29 Sebastopol, Ca 95473 (707) 823-3239.

SERVICES

Design/Support PC's. Hardware/Software installation training in Technical Support. Free consultation (415) 222-8463.

Printer Care - Factory authorized warranty service center. Citizen, Star, Towa. Service, Parts & accessories. (415) 471-2720.

University Student For Hire. —Configures private IBM/CLONE'S for maximum friendliness, performance. 100's of PD/SW programs. References... (707) 792-0291.

The Word Tailor
Technical Writing
Experts at making complex information clear, concise, and understandable.
P.O. Box 61032,
Palo Alto, CA 94306
(415) 961-8357

Computer Help!
PC support, beginners/advanced. Consult, install, configure, troubleshoot PC, XT, ATs, printers, scanners, displays, drives, add-ons, batch files. Software help for DOS, MS Word, Word Perfect, Ventura Publisher, Utilities, more.
Telephone Support
Integral Data
(415) 821-6846

Training
On Site or Here!
Need to understand your computer better?
Software • Hardware
Learn from professional instruction!
TRAINING UNLIMITED
1376 32nd Ave.
San Francisco, CA 94122
(415) 753-1848

SERVICES

Laser Printer Users — don't throw away your used toner cartridges! Save literally thousands of dollars over the life of your printer!!! Recharge only $40!!! Call Laser Cartridge Service now: (818) 794-5561 or (213) 545-2325.

SERVICES

Quality Word Processing -Resumes, books, plays, letters, graphics. Laser printing. Lessons taught on Pagemaker, Microsoft Word, MacDraft, Super Paint. Reasonable rates. Call: (415) 523-8184.

DEALERS WANTED
Music Synthesizer Card
- Consists of 12 channels (voice) stereo output
- Built-in stereo amplifier to drive speakers
- Software for album playing, auto-bass-chord-rhythm compiler (ABCR), background music, composer
- Define instrument (definist), allows you to create your instrument
- 32 preset instruments user definable
- XT/AT computer compatible

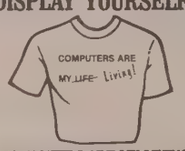
International Micronet Systems
916 Clement Street
San Francisco, CA 94118
(415) 752-8843

TELEPHONE SALES
Computer Hardware Distributor Looking For Experienced Telemarketing People. Openings Due to Expansion. Will Consider Candidates With No Experience, With Good Phone Skills, Positive Attitude & Enthusiasm. Salary, Commission & Benefits
Contact: Bill at (408) 297-9800
M-F 9am-5pm E.O.E.

Computer & Software Sales Rep Wanted
Immediate opening for the right person. MS DOS experience required. Competitive salary. Great working environment.
Send resume to: **Friendly Software**, 376 El Camino Real, San Carlos, CA 94070. **(415) 593-8275**

IBM PS-II Model 50 — Toshiba 321-SL printer, Wordperfect 4.2, X-Tree, more. Like new! $3,300. (415) 885-6343.

DISPLAY YOURSELF!



"COMPUTERS ARE MY LIVING!"
Printed in white and red.
On black or gray t-shirts, $11.50 ea.
On gray sweatshirts, $20.00 ea.
Specify color/size (S, M, L, XL).
Add $1.00 per item shipping.
Allow 4-6 weeks for delivery.
Checks or money orders to:
INTERMEDIA
P.O. Box 27670
Los Angeles, CA 90027

EMPLOYMENT WANTED

How can I make money with my computer at home? Call Tim, (415) 785-6833.

HARDWARE FOR SALE

Zenith/Heath Kit Graphics—Plus Smart Terminal $100 (408) 462-2801 Days.

Network & Consulting Specialists
- Documentation & Training
- Custom Programming— PC's, Mini's & Mainframes
- Multi-user Systems
- Inventory/Accounts Receivable Systems
- Gateways to Mainframes
- On-Site Maintenance Available
- Training & Support
- Call for FREE Consultation

International Micronet Systems
916 Clement Street, S.F., CA
(415) 752-8843
Refer to Display Ad Page

To Place A Classified Ad:

FREE ADS: Private individuals may have one free classified ad of 15 words or less (in all categories EXCEPT "Personal"). Additional words are 50¢ per word. A phone number, including area code, counts as one word. If you want your ad to run more than once, all subsequent printings will be charged at one half business rates.

BUSINESS ADS: Rates are $15 for 15 words or less. 50¢ for each additional word. Again, your phone number counts as one word.

TO ORDER BY MAIL: SEND COUPON TO:
MicroTimes Classifieds
5951 Canning Street
Oakland, CA 94609

TO ORDER BY PHONE with Visa or MasterCard only, call **(213) 467-7878**

For a mere fraction of your paycheck—buy, sell, trade ... whatever! Just $15 for the first 15 words plus 50¢ for each additional word, per issue.

CATEGORY
- ❑ Employment Offered
- ❑ Hardware For Sale
- ❑ Software For Sale
- ❑ Employment Wanted
- ❑ Office Space
- ❑ Video
- ❑ Personal
- ❑ Wanted
- ❑ Equipment
- ❑ Services
- ❑ Will Trade

Cost of ad_____ **X number of issues to run**_____**=Amount Enclosed**_____

Send Check ❑ Money Order ❑
Visa ❑ or MasterCard ❑ Exp. Date _____
Account # _____
Signature _____

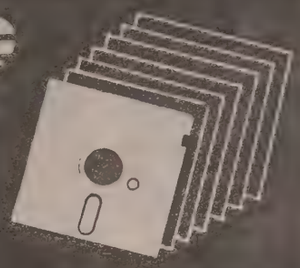
Advertisers Name_____
Street Address_____
City_____ State_____ Zip_____
Phone (_____) _____

Send To: MicroTimes Classified: 5951 Canning Street, Oakland, CA 94609

DEADLINE FOR INSERTION IN THE JULY ISSUE IN NOON ON MONDAY, MAY 27, 1988

AMERICAL GROUP

The Diskette Company



100% ERROR FREE • LIFETIME WARRANTY • U.S. MAJOR MANUFACTURERS

25¢
QTY. 200
100 ERROR FREE
with Paper Sleeves 27¢ ea.
with Tyvec Sleeves 29¢ ea.

$35.00
5¼" DS/DD
IN WHITE BOX
DISKETTES ARE IN BOXES OF 10
INC: ANTISTATIC SLEEVES, LABELS, TABS.
(MIN 100 DISKS OR 10 BOXES)
Special: Lots of 350 30¢ Ea.

32¢
5¼" DS/DD
INC: TYVEC SLEEVES, LABELS, TABS
IN PACK OF 10, BOX OF 100
STANDARD PRODUCT
MIN 100

45¢
COLOR
5¼" DS/DD
UP TO 16 DIFFERENT COLORS
INC.: Tyvec Sleeves, Color Coded Labels and Tabs. Rainbow Pack available. Colors: L.Blue M. Blue, D. Blue, Gray, Red, Pink, Brown, Beige Burgundy, Yellow, White, Orange, Green, Lavender, Silver* & Gold

$1.10
MIN 25 EA
3½" DS/DD
LIFETIME WARRANTY
100% ERROR FREE
3½" DS/DD IN WHITE BOXES W/LABELS
12.50 BOX OF 10
3½" DS/DD IN PLASTIC BOXES W/LABELS
13.80 BOX OF 10

MIN 30 **90¢** EA
5¼" DS/HD
High Density For IBM AT and Comp.
INC.: Tyvec sleeves, Color Coded Labels and Tabs
IN 12 DIFF. COLORS
D. Blue, Red, Pink, Brown, L. Blue, Gray, Burgundy, Yellow, White, Orange, Green, Lavender
In Black Color 69¢

3½"DS/HD 1.44 MB DISK FOR IBM™ PS/2 **3.75** EA Min.10

3½ "Floppy Disk Drive 720K Capacity $ 119.00
1.44 MB Capacity $139.00

DISK STORAGE
DD 100 Holds 100 5¼" w/Lock $8.95
DD 120 Holds 120 5¼" w/Lock $11.95
SS40 Holds 40 3½" $6.95
SS80 Holds 80 3½" $10.95

Nashua

	Box of 10
5¼" DS DD	$5.10
5¼" DS HD	9.95
3½" DS DD	13.80
DATA CARTRIDGES	
DC600A	22.25
DC2000	17.90

Verbatim A Kodak Company — **DataLifePlus**

5¼" DS/DD $9.85 BOX
DATALIFE PLUS
TEFLON PROTECTED
5¼" DS/DD $7.95 BOX
5¼" DS/HD $14.30 BOX
3½" DS/DD $14.90 BOX
3½" DS/HD $44.00 BOX

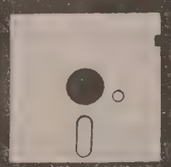
BONUS

3½" DS/DD	$13.50
5¼" DS/DD	$4.90
5¼" DS/HD	$11.60

Wabash DATATECH

3½" DS/DD	$11.50
5¼" DS/HD	$9.95

SAME DAY SHIPPING
Dealer Quantity Prices Available
(818) 765-3040



1. Purchase orders accepted from Fortune 500 Firms, colleges, school, government and state organizations. min purch. order $50 +10% on above prices.
2. Every product fully warranteed through Americal Group
3. On large orders- CALL US FOR A QUOTE
4. APO + FPO shipping charges: are 15% of purch. min. $6.00

VISA, MC, COD, Pick Up or
Send your order with check to:
AMERICAL GROUP
14200 Ventura Blvd., suite 201
Sherman Oaks, CA 91423

ADD $4.00 shipping for first 100 Disks and $1.00 every 100 thereafter
Calif. Residents ADD 6 1/2 % sales tax.
FAX # (818) 765-3887

CLASSIFIEDS

SERVICES

DOCUMENT SCANNING —typewritten pages scanned onto floppy disks. 50 cents per page. (408) 227-8448.

Technician/Programmer/Author/Photographer avail -for consultation in the Bay Area. Specialist in assisting overburdened Engineering Departments meet deadlines, generate & implement ECOs & review & correct documentation. Prototype & PCB fab mod & test; drafting, documentation & diagnostics. Send legal-sized S.A.S.E. & your Non-Disclosure Agreement for an evaluatory copy of consulting contract. Thipdar, P.O. Box 5519, Walnut Creek, CA 94596.

SERVICES

User friendly manuals are easier than you think. User Documentation Service. Free estimates (415) 586-4577.

Slides —from Amiga graphics. (408) 275-0664.

Rent-A-Writer's Professional Technical Writers — will come to your site or work independently to document all your hardware, software and temporary writing needs. Call (415) 841-8003.

Writing Consultant. Experienced editor with Master in Computer Science and Sales background. Write your proposal, grant, memo or manual clearly and powerfully. Call Diane for appointment (415)824-1026.

SOFTWARE

1988 Federal Tax. Program projects tax using rate schedule for your filing status, income, deductions, etc. For IBM or compatible with Lotus 123(V2), SuperCalc 4 or Quatro. $25 for disk/instructions (408)243-1472.

ESC
THE PROFESSIONALS IN CUSTOM SOFTWARE FOR
- VIDEO Store
- RETAIL Store
- DOCTOR Office
- LAN Users

call: Tue-Sun
(408)292-0422
Easy Software Company

IBM Word Perfect 4.2 — $150. Word Perfect Library $50 never opened. Eric w-(408) 985-7713.

MAC SOFTWARE — Omnis 3 Plus Express 50% off —call David Satava 540-5384.

SOFTWARE

The Support Software Co. 22732 Foothill Blvd. #7, Hayward, CA 94541 with only the best of User Supported and Public Domain Software. For PC and Compatibles, write or call for free catalogue. (415) 881-5664.

Programs For Microsoft Windows—Spelling Checker; $89.95, Typing Teacher; $34.95, Windows programmer's reference manual; $19.95, Programmer's starter kit; $49.95, and more! Send SASE for details. California residents add 7% tax. Kwan Technologies, Box 64160, Sunnyvale, California 94086-4160.

WANTED

DRAMS WANTED -New or used, any quantity in circuit board OK. Call anytime (408) 243-1576.

WANTED: Computer & electronic scrap. Precious metals in any form. For top prices & full details call: West Coast Metals Process, Inc. 1468 Zephyr Avenue, Hayward, CA 94544 (415)489-8141.

DRAMS WANTED
(408) 243-1571 ANYTIME
New or used DRAMS wanted.
Memory boards wanted.
Failed PC-Clone boards wanted
for removal of IC's.

WANTED

Toshiba 321p with tractor. New or demo, any quantities call (707)585-8811.

WILL TRADE

Will Barter my skills —as Journeyman Carpenter for IBM Compatible Hardware and Software. Dave: (415) 484-2648.

Sell your used computer in MicroTimes Classifieds!
Call (415) 652-3810

LOOKING FOR SOME
GREAT CONVERSATION?
JOIN US ON THE WELL!

Right now there are interesting intelligent people like you holding discussions, making contacts, networking, arguing, storytelling, joking . . . and it's all just a few keystrokes away. Join our fascinating and lively online community.

Only $8/monthly + $3/hour
Sign up by modem: 415/332-6106
Or call for information: 415/332-4335
THE WELL (WHOLE EARTH 'LECTRONIC LINK)

THIS SPACE CAN BE YOURS!
To Place a Classified Display Ad, call (415) 652-3810

INDEPENDENT CONSULTANTS

We develop quality systems at reasonable rates. All types of programming available (specializing in dBase III). Call Joy for a free estimate.

☐ Custom Programming
☐ Hardware/Software Installation
☐ Training and Support

ACCELERATED INFORMATION, INC.
(415) 543-7998

RUN COLOR GAMES
on your Mono Monitor
with DO-COLOR $29.95
Tax $1.80
S/H $3.00
— Uses Hercules-type Video Boards —
— Runs even Self-Booting Games —
examples: Certificate Maker, Pac Man, F-15
WILKINSON SOFTWARE
6400 Westminster Blvd., Ste. 115, Westminster, CA 92683
714-894-3216

TOSHIBA
T-1000/1200 . . . . . $779/2175
T-3120 MB $3099
Modem for laptops $295

HEWLETT PACKARD
Laser Series II $1625
1 MB expansion HP/compatible $349/320
2 MB expansion HP/compatible $690/620
HP Scanjet scanner/Deskjet $1275/699

COMPAQ
Deskpro Models
286 1/20/40 MB $1800/2250/2525
286 Model 40 (Factory) $2850
386/20 MHz 60/130/300 MB . . . . . $CALL
386 40 MB $4200
Portables
II Model 4 . . . . . $2250
II Model 2, 2 dr., 256K (80286) $1895
II Model 20 MB $3395
III Model 40 MB $3950

IBM
PS II Model 30-002/021 . . . . . $1225/1725
PS II Model 50-021 . . . . . $2689
PS II Model 60 44MB/70MB $3729/4125
PS II Model 80 44MB/70MB $5100/5900

RENTALS
Rent computers/monitors/FAX/printers/scanners/lasers by the week or month
(213) 312-5046

QD
(213) 478-9811
11651 W. Pico
Los Angeles, CA 90064

Sales
Telephone Sales Pros

Are you an outgoing, motivated individual looking to apply your talents in a rewarding position?

We are a rapidly growing five-year-old company looking for people to sell major-brand computer and business electronics products from our convenient Van Nuys location.

If your background is sales and you've got excellent phone skills and some knowledge of computers, then you're just the person we're looking for.

In return for your enthusiasm and experience, High Technology Distributing Company offers an attractive commission program, excellent benefits package, and fast-moving products to sell.

To schedule an interview, please call Ms. Tom at (818) 994-8001 between 10 am and 5 pm. EOE.

HIGH TECHNOLOGY DISTRIBUTING COMPANY, INC.

AccounTech
dBASE/Clipper programming
for...Accounting (SBT and SourceMate)
Bar code systems
Project Management
Remote Systems
LANs (Novel Netware, PC/NOS)
Special Requests
(408) 985-2222
3031 Tisch Way, Suite 200
San Jose, CA 95128

SUBSCRIBE TO MICROTIMES

Don't miss an issue! Just fill out and return the coupon on page 144 of this issue to have MiicroTimes delivered to you door every month.

Ahead of everyone. . .

Crescent Com, Inc.

Introduces

Crescent Ventura Publishing System

- 1.2 floppy
- 512K memory
- Selectable I/O speed, 12 MHz or 8 MHz
- Norton Utility Advance Version SI = 13.7 MHz
- Independent coprocessor
- True read & write
- 40 MB Seagate, 48 ms
- 2 serial, 2 parallel
- Professional system manual
- Paper white flat screen monitor 14"
- 101 keyboard
- Resolution 1024 x 768
- Hercules compatible
- Swivel base
- Ventura Publisher

One year parts & labor warranty

$2299

Add ***1650** for HP Laser Series II w/System Purchase

COMPAQ

COMPAQ 286 640K
40 MB Full Monosys. **2650**
Desk 386/20 . . . . . **5400**
Portable II Model 4 . . . . . **BEST**
Portable 386/20 All Models . **BEST**

AST PREMIUM 286

AST 386 . . . . . **LOW**
AST Model 80 . . . . . **BEST**
AST Model 120 VGA System . **BEST**
AST Model 140 VGA System . **BEST**

MONITORS

Genius Full Page . . . . . CALL
Amdek 310A/410 . . . . . 135/160
Quimax AM/Gr 135
Samsung EGA 360
NEC Multisync II 575
PGS Max 12 147
Sony Multiscan 585
Casper 14"/Samsung AM . 120/85
Mitsubishi PGA Diamond Scan 500
Packard Bell 75
Nanao 8060S 570
Taxan 770 540
Other Monitors . . . . . CALL

MISC

MS New Bus Mouse 105
Fax Machine . . . . . CALL
PC Mouse w/Software 110
Chips 64/256/128K . . . . . CALL
Surge Protector 16
Verbatim Teflon Coated 17
Maxell DS/DD 13
Dysan DS/HD 17
Xidex-Precision Box 07
Printer Stand 19
Sony 3.5" Box 10 diskettes 25

TOSHIBA T1000 699
T3200 3950

HARDWARE

Paradise VGA Plus 270
EGA Wonder/VIP (AT) . . 199/280
Vega Deluxe/VGA 190/280
Genoa Super EGA w/soft 189
Paradise Autoswitch EGA for AT 185
Everex 1200B/2400B . . . 95/190
Genoa Spect. Clr/Mono 175
Other Boards . . . . . CALL
Everex VGA . . . . . Lowest
Everex All Products . . . . Best Price

PRINTERS

NEC/Canon . . . . . CALL
HP Laser Series II 1675
HP Laser/+/ 2115/3025
OKI Laser . . . . . Best Price
Okidata—All Models . . . Best Price
Epson 286E/86E 465/329
Toshiba 321SL/351P 515/950
Star—All Models . . . . . Best Price
QMS 800+ 4425
Citizens—All Models . . . Best Price
AST Laser . . . . . Best Price
Panasonic 1091i 210
Panasonic 1081i 190
NEC P2200 350

COMPATIBLES

AMT All Models . . . . . CALL
AT-386 1MB base system . . . **1900**
AT-286 6/12 MHz base **995**
Mini AT-286 base system 950
Portable 8MHz 2 drive 900
286 LCD Portable III 1990
Samsung AT 286 1MB base system **1050**
ALR 386 . . . . . BEST PRICE
XT 20 meg system 1000
Mitac All Models . . . . . Lowest

SOFTWARE

Word Perfect 4.2 210
MS-DOS 3.3 w/GW BASIC 95
IBM DOS 3.3 100
IBM OS/2 350
IUS Acctng. Pkg. GL/AP/AR . . CALL
IUS Super Project . . . . . CALL
Flight Simulator 38
Supercalc 3/4 . . . . . CALL
dBase III/Plus 400
Wordstar Pro Release 4/Network 275/337
Wordstar 2000 Plus/Network 337/399
Apple Software . . . . . CALL
Ventura 480
Pagemaker 480
Borland all products . . . . . CALL

DISK DRIVES/ HARD DISKS

½ HT. Floppy Fujitsu 79
½ HT. Toshiba/Teac 85/99
½ HT. Toshiba 3½"/1.44 . 120/145
Hard Disk 20MB kit 270
Miniscribe 40MB 400
Micropolis 40/80 . . . . . 510/699
Tape BU . . . . . CALL
Seagate 40MB 370

SERVICE CONTRACTS AVAILABLE
CALL FOR PRODUCTS NOT LISTED

Prices reflect a cash discount
Free in-store installation of products.
M-F 9-6 • Sat 10-5

CRESCENT COM INC.

Prices subject to change without notice.

690 Market Street • Suite 515 • San Francisco, CA 94104
(415) 362-7120

3531 Ryder Street • Santa Clara, CA 95051
(408) 738-2480

214 Francisco Lane • Fremont, CA 94531
(415) 490-7967

Fax #
(408) 738-1973

ADVERTISERS' INDEX

3F Associates 33
5M American Technology 12
800 Software 37
Aborn Computer 70
ACADemy, The 106
Access Computer 81
Advanced Computer 4,5
Alpha Fine Computer Furniture . 154
Americal Group 161
American Computer Systems 3
American Digital 129
American Ink Products 152
Aroma Computer 152
ATC 8
Authorized Technical Services . 138
Belmont Computer Products 46
BTC 59
CGI Technology 12
Cimpex 124
Computer Attic 7,131
Computer Centrum 82
Computer Furniture 136
Computer Graphics Center, Inc. 38
Computer Insights 147
Computer Spectrum 142
Computer Spot 68
Computer Store 109
Computer Surplus Store 139,144
Computer Swap 98,140,158
Computerland Colma 121
Computertime 10,14,22,32
Computown 39
Cooperative Type 150
Crescent Com 163
Cypress .. 106,114,118,156,158,164
Data One 119
Data West Computers 140
Diamond Software 15-17
Discount Computer Products 148
Discount Micro World 34,35
Eagle Electronics 137
East-West Computer Shows 72,100
EFI's Discount Computers 156
EMS 107
Ergonomic Computer Products 136
Evergreen Company 66
Friendly Software Store 24,101
Fry's 2,83-92
Fujitsu Components 77
Gates/Toshiba 23
Generic Computer Systems 144
Guenther 141
Guitar Showcase 133
H&R International 106
Halted Specialties 111
Haltek 165
Heath Zenith 125
Herb's Discount Software 44
HT Electronics 164
ICB 154
Image Factory 140
IMC 105
International Micronet Systems 25-27
Jemini Electronics 143
Jointek 76
Julian Systems 159
Kenfil/Kortek 167
Klynas Engineering 158
Leo's Audio & Music Technologies 22
Lucas International 31
Managing Technology 60,61
Manex Co. 98
MaxBit Computers 46
Micro 1 168
Micro Distribution Center 67
Micro Learning Center 153
Micro Service Center 40
Micro Star 42
Micro Strategies 113
Micro Systems Engineering 13
Micro-Tech International 103
MicroAge (Pleasanton) 156
Microcom Systems 28
Microware Exceltek 99
Microworld 135
Millenium Communications 71
Mini Micro 49
Mini Micro/NEC 11
Mini Micro/Seagate 29
Monarch Computers 38
Network Associates 73
Nordic Computers 65
OEMI 9
PC Com 154
PC Options 150
PC Plus Consulting 19
PC Pro 97
PC Upgraders 41
Peripheral Land 123
PMA 31
Precision Software Products 50
Professional Computer Management 63
Q.S.P. 45
Quality Computer 32
Quality Distributors 157
Rosehill System 20,21
Santron Computers 75
Schwab 150
Sci Tech Computer Stores 95
SEFCO Computer Products 28
Softnet 43
Software City 55
Software House 117
Songtech International 82
Sturgill & Booth 40
Subscription Promo 144
Summit Micro Designs 154
Supersoft 51
Tanstaafl 14
Teammark 43
Technoland 151
Technology Marketing Group 127
Tek Computers 57
Tokyo Electroland 69
Toptek Micro Center 115
Transnet 155
Universal Computer Products 30
Valleytek International 150
Vision Arts 142
Wellway International Corp. 47
Winners Circle 79
Worldwide 110
Xerox Computer Repair Center 24
Yes 149

COMPLETE SELECTION

COMMODORE - AMIGA - ATARI ST

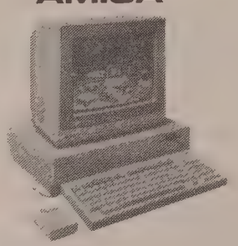
HARDWARE and SOFTWARE

AMIGA AND ATARI ST COMPUTERS

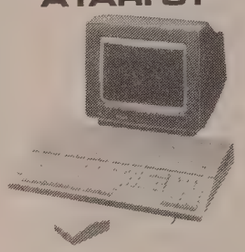
LET US HELP YOU DECIDE WHAT'S BEST FOR YOU

NEW AMIGA 500 AND AMIGA 2000
ATARI MEGA ST 4
ALL SYSTEMS ON DISPLAY

AMIGA



ATARI ST



PANASONIC PRINTERS
NEC PRINTERS
XEROX COLOR PRINTER
ROLAND XY PLOTTERS

CASIO KEYBOARDS
1200/2400 MODEMS
VIDEO DIGITIZERS
20 MEG HARD DRIVES

HT ELECTRONICS, INC.

346 W. MAUDE AVE.
[MAUDE AND MATHILDA AVE]
[ALPHA BETA SHOP CTR]
SUNNYVALE
[408] 737-0900

5379 PROSPECT ROAD
[LAWRENCE AND PROSPECT]
[WESTGATE SHOP CTR]
SAN JOSE
[408] 255-1490

HOURS: M-F 9:30 - 6:00. SAT 9:00 - 5:00

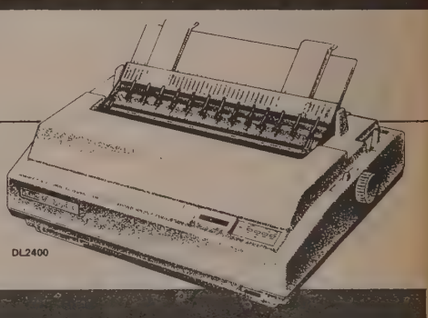
FUJITSU DL 2400 and DL 5600

DL 2400
- 216 cps draft - 72 cps LQ
- 24 wire dot matrix
- 16 character LCD panel
- Parallel and serial interface
- Quiet (53dBA)
- Single, double, triple-bin cut sheet feeders available
- Emulates IBM Graphics/Diablo 630 API
- Available in color

Call for price

DL 5600
- 24 wire dot matrix/24K buffer
- 486 cps draft - 162 cps LQ
- Handles 8 part forms/copies
- MTBF - 8000 power-on hours
- Emulates Diablo 630 API, IBM Graphics Printer and IBM Proprinter XL
- Serial and parallel interface
- Available in color
- 16 character LCD panel

Call for price



Cypress Distributing Company

(Outside CA) 1-800-344-3044

560 Lincoln Avenue
San Jose, CA 95126
(408) 297-9800

22186 Rim Pointe
El Toro, CA 92630
(714) 770-7244

2670 Truxel Road
Sacramento, CA 95833
(916) 646-1955

Datasouth 10 Net Century Data Systems Ampex
Personal Computer Products Panasonic Seikosha C. Itoh
Moniterm Star Micronics Mitsubishi Rutishauser Canon

N E W • U S E D • S U R P L U S

A COMPLETE ELECTRONICS SUPERMARKET!

PC/XT Serial Communications I/O Interface Card (RS/232) $17.95

• Short card • IBM compatible* • Second port can be added

AT I/O Interface Card $19.95

• Serial communications port • IBM compatible* • Parallel printer port

Mitsubishi 1.2 MB Floppy Diskette Drive $89.95

• PC/XT/AT compatible • Black bezel • One year warranty • IBM compatible*

AST SixPac Plus $67.50

• Serial communications port • Parallel printer port • Battery backed RTC
• Game port • 384 KB capable

Xebec 1410 Hard Disk Interface Card $39.95

• SASI to ST-506

Polo Color Monitor $229.00

• CGA RGB input • Tilt-n-Swivel base • High contrast black mask
• TTL or analog input • 11 inch diagonal

Seagate ST-4096 $749.00

• 80 MB • Full height • 28 ms access • Partition software

Power supplies, fasteners, hand tools, prototyping supplies, enclosures, racks, machinable plastics, new and used equipment, wire, heat-shrink, solder, heatsinks, meter[illegible] hardware, transformers, fans and gaskets. More! More!

Visit our 12,000 plus square foot retail [illegible] components at [illegible]

JUNE 4 - GIANT SALE FREE HOT DOGS 9-90% OFF EVERYTHING!

[illegible] Prepaid orders sent freight C.O.D.
[illegible] American Express accepted.

[illegible] Mon–Fri 7:30am to 7:00pm and Sat 9:00am to 5:00pm (PST).

*IBM is a registered trademark of International Business Machines

HALTEK ELECTRONICS

1062 Linda Vista Ave., Mt. View, CA 94043 · 408-744-1333/415-969-0510

DVORAK'S LAST COLUMN

Channeling A Demon:

Jorge, The Entity From The Second Plane Of The Infinite Interregnum, Tells It Like It Is

By John C. Dvorak

Recently an old time CP/Mer railed in one of the lesser magazines about how terrible the world has become because of the dominance of IBM and Apple. Columnists too, he said, were to blame because we boost these products at the expense of the Atari, the Amiga, and most of all "at the expense of the good old CP/M machines."

This fellow once owned a large company making CP/M computers, and although, behind closed doors, he admitted that he really didn't like computers or the people who used them, he publicly pontificated about one thing or another as though he was the world's most attuned computer enthusiast.

Alas, he seems to have become an embittered old crab who now says that the whole world is wrong but him. I couldn't figure it out. He used to be such a nice guy.

"It's great to be back. Here I can complain and condemn and do my best to stop progress. My goal is to sink the whole nasty computer scene."

That's when I did some research. The old crank I describe is not really one person. In fact, it turns out that it's an entity that shows up here and there and channels itself through whatever willing malcontent it can find. The most likely victim is someone who was once in the spotlight, has faded from view, desperately hopes to make a comeback and just can't manage the energy. It may be the wrong time or the wrong place — whatever it is, it won't happen. In this industry fortune is a lottery, and few people win the lottery more than once. If they don't quit winners, they go the way of this poor fellow, blaming the squandering of their one opportunity on everyone but themselves. Soon the entity gets them.

I went to some professional channelers and discovered that the name of this entity is Jorge (pronounced "hor-gay") from the second plane of the infinite interregnum. On April 22 Miss Diva Massa Mann of Berkeley channeled the entity Jorge for me, and I was able to interview this beast without the usual intermediary (the above-mentioned ex-luminary) and talk to it directly. The results of the interview follow.

JCD: Jorge, I have some understanding of what you've been doing recently in the microcomputer arena. The question on my mind is: who are you? Surely old entities such as yourself must predate computers by millennia.

Jorge: That's a good question. Thank you. In ancient times I was a very powerful entity, and well known amongst the illuminati. I helped, I think, cause the fall of the Roman Empire. Lead pots and pans were my idea! I also like to think that it was I who, while channeling simultaneously through a number of Roman Catholic Cardinals, managed to institute the Inquisition.

JCD: The Spanish Inquisition?

Jorge: Spanish, French the whole banana. Note that I used to be able to channel through more than one guy at the same time. One hard trick! Few could resist my strength back then. Honestly, I think the Inquisition took it out of me.

Oh, I managed to instill myself in Mussolini some years ago, but I soon lost my touch to demons who could worm their way into strong personalities and do some real damage. I'm convinced that entities like myself lose our strength over time. It was that Inquisition nonsense. That really drained me.

JCD: So we see that you're turning up now and again in, of all places, the world of small computers.

Jorge: Yes, it's great to be back. Here I can complain and condemn and do my best to stop progress. My goal is to sink the whole nasty computer scene.

JCD: What for?

Jorge: Do I need a reason? This is my job. I find a willing victim and then channel through the person a lot of vitriol and arrogance. I can't make a Mussolini anymore, but I can stir up some sediment.

JCD: How do you choose your victim?

Jorge: First of all I have to find a person with few or no scruples. The best is a thankless person who, for whatever reason, has not been as successful as he or she should have been. This type of person wants to blame everyone else for any mistakes the person makes. If the person ever accepts responsibility, then it's only because they were "tricked." Then they blame the perpetrator. Again they let themselves off the hook. It's never their fault.

Once the person meets this criterion I look for two other signs. The first is that they appear to be bitter about their situation.

JCD: The second?

Jorge: A weak mind — one that can easily be penetrated by a feeble old entity like myself. I haven't got the strength anymore to punch my way through anyone with, say, character. I wait for a weak moment, then move in. Heck, I can stay in some of these people for days before they notice.

JCD: How do they notice?

Jorge: They look in the mirror, so to speak. There was some guy recently who said some nasty things about you — remember him? That was me!

JCD: I'm flattered you care, but it happens all the time. So what else is new?

Jorge: No, this one was great. You, over the years, had gone out of your way to help promote this guy and his long-defunct company. He owed you. I breezed right in and he turned on you. Haha. After he did it, he realized what had happened, and I took the back door out. He's an easy target though — I own him.

"There's no way I could screw up the microcomputer industry. Look around you. What could make it worse and more confusing than it already is? I'm just in it for laughs."

JCD: I don't know who you mean, but I think it's terrible. Have you no heart?

Jorge: Are you kidding? Of course not. Although the good old Inquisition is only a lingering memory, I can still hope for a comeback. I have to admit that it will never be through the likes of the guys in this business. There's no way I could screw up the microcomputer industry.

JCD: Why not?

Jorge: Look around you. What could make it worse and more confusing than it already is? I'm just in it for laughs.

Just then Miss Diva Massa Man let out a huge laugh, trembled and returned to her normal self. She shook her head and told me that the entity was creepy and she'd rather I keep these demons from making contact through her. I gave her the agreed-upon $15 and left. Now I'm on the lookout for Jorge and any other micro demons, hoping they don't try to channel through me. □

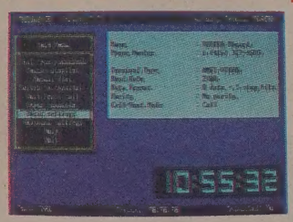
"We rate Freeway Advanced very good for ease of use . . .
For ease of learning we rate Freeway Advanced very good."
Glen Tapanila and Tom Bigley, InfoWorld, Oct. 12, 1987

FREEWAY™

The most powerful
The most user friendly

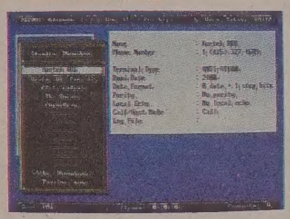
The best communication software.

Main Menu and Autopilot



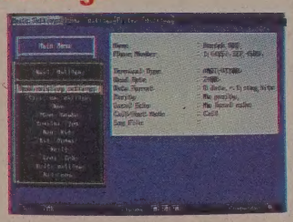
Freeway's pop-up menus and windows make communications fast. With the "autopilot" you can automate any communications sequence, without programming scripts, simply by going through the sequence once.

Phonebooks



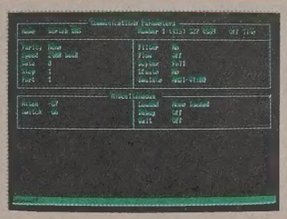
Freeway stores the numbers and settings for up to 108 systems. You simply pick the number you want and hit Enter; Freeway dials.

Settings



The parameters you need are gathered in simple menus. You simply zip through with arrows and Enter and save settings in the Phonebooks.

Crosstalk® Emulation



Command line interface screen for users accustomed to Crosstalk®. Freeway Advanced's script language is an extension of the command language used by Crosstalk®.

Take Freeway's simple menus, clear displays, and broad range of features. The result is powerful but straight forward communication.

Freeway versus Other Communications Software

	Menu Driven	On-Line Help For Every Command	One-time EASY Setup	Phonebooks/Automatic Dialing	Login Learning [Autopilot]	On-Line Page Editor	Password Protection	Script Language	Crosstalk Emulation	LIST PRICE
FREEWAY	YES	YES	YES	YES	YES	YES	NO	NO	NO	$ 59.95
FREEWAY Advanced	YES	YES	YES	YES	YES	YES	YES	YES	YES	$139.00
Xtalk XVI	NO	NO	NO	NO	NO	NO	NO	YES	WELL. . .	$195.00
Xtalk Mk.4	YES	NO	NO	YES	YES	YES	YES	YES	WELL. . .	$159.00
Smartcomll	NO	NO	YES	LIMITED	LIMITED	NO	NO	NO	NO	$149.00
MS Access	NO	NO	NO	LIMITED	LIMITED	YES	YES	YES	NO	$245.00

"Freeway and its big brother, Freeway Advanced, are aptly named for communication programs. Both packages, because of their readily learned menu structures, conjure images of tooling down the highway in a sporty car."
Ron White, PC WEEK, Oct. 6, 1987

"The menus and screens are exceptionally well-designed . . . all the features of the best terminal programs available, it lacks neither speed nor efficiency. Best of all, it is easy to use. I was up and running within half an hour of reading the manual."
Mike Salisbury, Soft Sector, Oct. 1987

"If you've been waiting for the ultimate comm program to come along your wait is over!!"
Mel Goldstein, T.O.P.C.C. Oct. 1987

"Freeway is not only cheap, it has features you won't find in telecommunications programs costing hundreds of dollars more."
David Needle, Compaq, Fall 1987

KORTEK INC.
505 Hamilton Avenue
Palo Alto, California 94301
✆ (415) 327-4555

KORTEK

At these authorized Kenfil dealers

800 Software
918 PARKER ST.
BERKELEY, CA 94710

DIAMOND SOFTWARE
7916 CAPWELL DR.
OAKLAND, CA 94621

KAYLEEN
1925 FRANCISCO BLVD.
SAN RAFAEL, CA 94901

DISCOUNT MICRO WORLD
68 PAUL DR. #C
SAN RAFAEL, CA 94903

TECHNOLAND
2960 GORDON AVE.
SANTA CLARA, CA 95050

ACCESS COMPUTER TECHNOLOGY
3393 EL CAMINO REAL
SANTA CLARA, CA 95051

DESKTOP PRODUCTS
1316 63RD ST.
EMERYVILLE, CA 94608

SOFTWARE CITY - CONCORD
1500 MONUMENT BLVD.
CONCORD, CA 94520

THE P.C. EDGE
2590 N. FIRST ST.
SAN JOSE, CA 95131

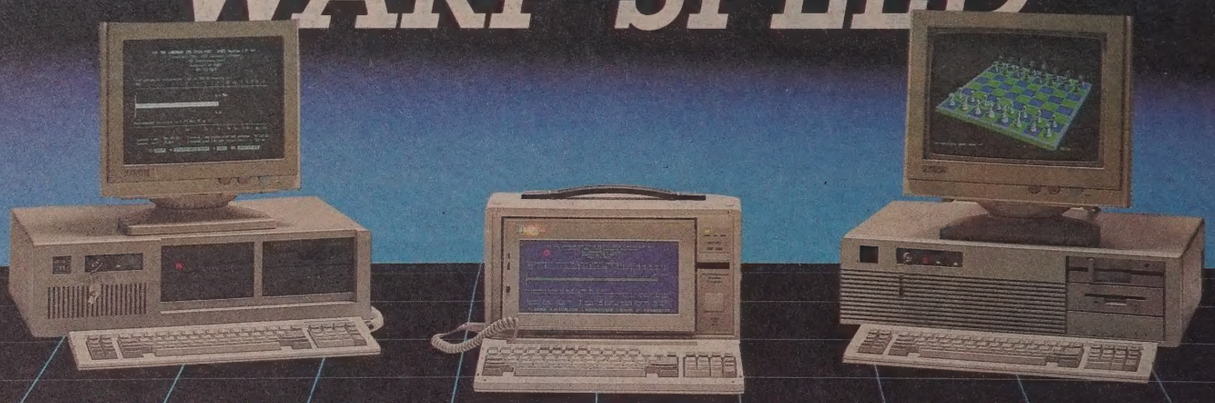
MICROAGE - SUNNYVALE
544 N. FLORENCE
SUNNYVALE, CA 94086

BASK COMPUTERS
30 GOLF CLUB RD.
PLEASANT HILL, CA 94523

FISCHER/HOWARD INT'L. INC.
654 BAIR ISLAND RD. #302
REDWOOD CITY, CA 94063

PC DISTRIBUTING
8250 ALPINE AVE. #C
SACRAMENTO, CA 95826

WARP SPEED



30 Day Risk-Free Trial • On-Site Service Available

The Fastest PC's in the Galaxy, at down to Earth Prices

12 Slot Power 286/386

We put the 80286 on a card so you can upgrade to the 80386 whenever you're ready. Most of our corporate accts. prefer this American-designed, industrial quality machine. Why? 12 slots, 240 watt power supply, 4 drive openings & ruggedized construction. Tower, rack-mounted and motherboard versions available.

50MB, mono, system **$1895**

386 Speed, 286 Price

12MHz, zero wait states with 1 to 1 controller and Power Optimiser software makes this AT compatible the fastest at any price. Landmark speed Test rates this 286 at 15.6MHz! The data transfer rate is 4 times faster. A complete system with 1MB RAM, monitor and 50MB, 33ms hard disk is only:

50MB **$1950**

12MHz 1 wait state, 640K, 50MB, 101 Keyboard, 1.2MB **$1695**

Passport 286 & 386

New large screen.

Micro 1 introduces the Passport 286 & 386 portables that keep pace with the best Compaq has to offer. 12, 16 or 20MHz and up to 8MB of zero wait state memory gives you more power than most desktop computers. Both the 11", 640 x 400 resolution backlit supertwist, LCD screen and gas plasma screen are far more readable than typical laptop screens. External EGA and VGA output optional. 1 to 1 interleave controllers and 50 to 150MB drives optional. 200 watts, 6 slots standard.

386-16MB, 20MB **$3295**

286-12 640K, 20MB **$1995**

"Micro 1's clones are designed for industrial use. . .none are so well made."
Paul Muller, Ford Aerospace, Palo Alto, CA

30MHz Performance

The Power 386 outruns the IBM Model 80 and CompaqDeskpro 386/20. How do we do it? 20MHz, zero wait state with 64K of static RAM cache and ultra-high speed ESDI hard disks with 1 to 1 interleave buffered controllers. Add to this our special Power Optimiser software that accelerates reads and writes by 300%, and you've got the best that money can buy, at ⅔ the price! Landmark, Speed Test rating 30MHz.

UNIX systems with DOSMERGE now available. Ask about our Tower!

16MHz (24MHz Landmark) 1MB Complete system with 50MB and monitor.

$2895

Call for price on 20MHz and other configurations.

MICRO 1

557 Howard St.
San Francisco, CA 94105
Tech Support: (415) 974-6997
Fax: (415) 974-6996

Summit Computer System
12A Chapel St. North
Colchester Essex
CO2 7AT UK
(0206) 761950
FAX: (0206) 761941
Telex: 940 11232

To order call toll free:

1-800-338-4061

In California call

(415) 974-5439

Ask our customers about our quality, service and prices:

American Express
Anheuser-Busch
Associated Press
Boeing Aerospace
Clorox
Coca-Cola
Dean Witter
Ernst & Whinney
Federal Communications Com.
Ford Aerospace
Heath Zenith
Honeywell
Intel
Itel
ITT
Lockheed Missiles & Space
Lucas Film
Martin-Marietta
Master-Card
McDonnel Douglas
MCI
NASA
Pacific Bell
Rockwell International
Siemens
Tandem Computers
TRW
United Airlines
University of Calif.
Wells Fargo
Westinghouse